

AC
SPECIAL!

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Your Original AMIGA® Monthly Resource

For The Commodore

Volume 7 No. 1 January 1992
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UK £2.50

PROGRAMMING WITH CARE

Reviews:

Buddy System
Personal Single Frame Controller
DiskMaster II
Pixel 3D 2.0

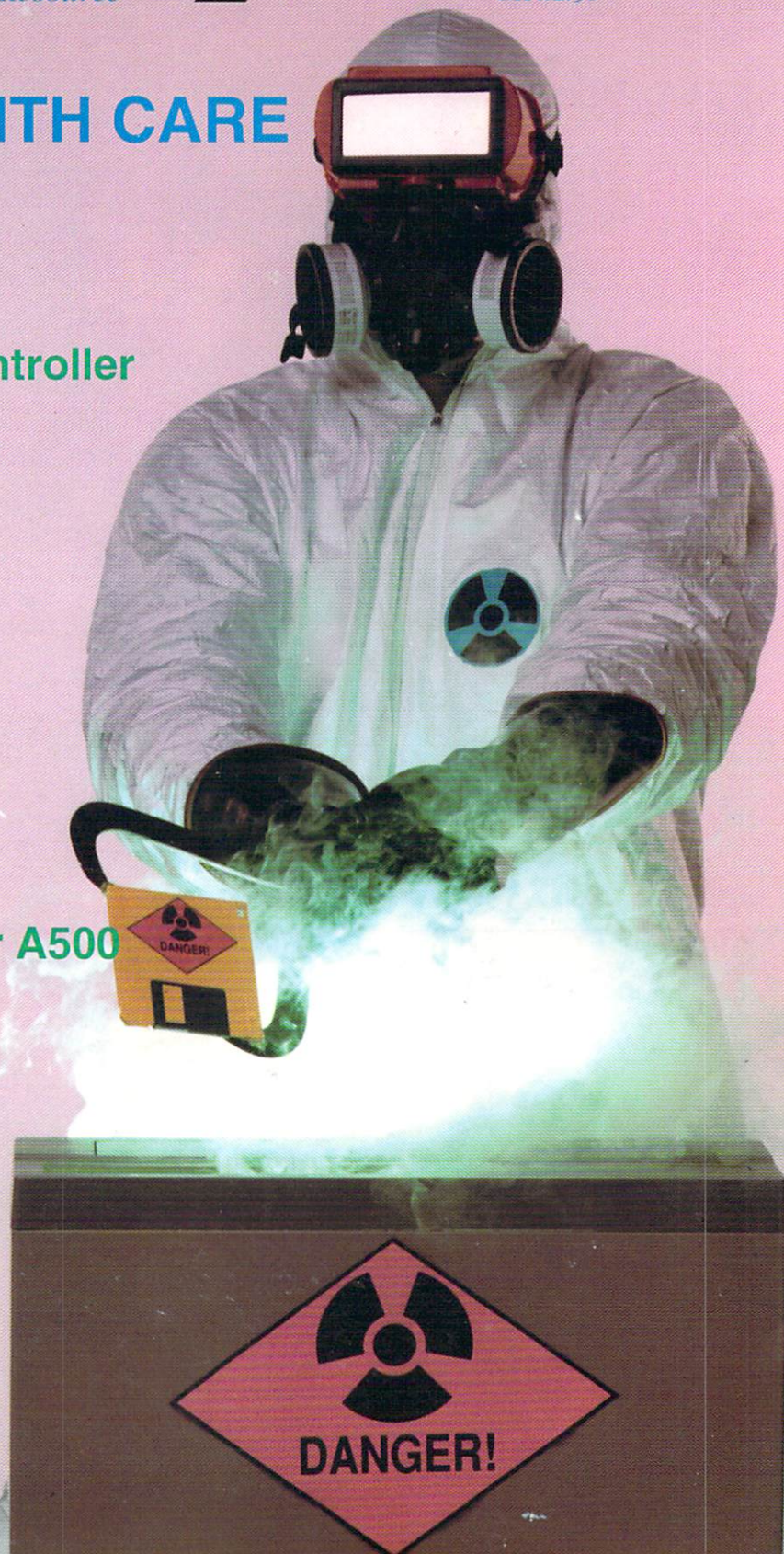
How to get the most
from your RAM disk

Zipterm: An explanation of
serial.device and
console.device

Memory expansion for your A500

Help for the Help Key:
make your help key work

How to use an IBM mouse
with your Amiga



MUSIC SOFTWARE FOR SOUND MINDS!

SUPERJAM!

Musical Mess to Overnight Success

MEET
JOSH JONES.

His life-long dream to be a musician was continually thwarted by his lack of talent. Why, he once gave his piano teacher an ear infection!

★Enter SuperJAM!★, music software for the tone-deaf and talented alike. His mouse firmly in hand, Josh learned to write music without ever picking up an instrument or reading a note. Suddenly, he was master of guitar, drums, bass, piano...you name it!

He wrote music in every style imaginable – from classical, to jazz, to rock-n-roll. Using SuperJAM's TurboSound Technology, Josh designed his own TurboSamples, which turned his Amiga into a powerful music machine capable of playing up to 16 voices at a time.*

But best of all, SuperJAM! cost Josh Jones a lot less than surgery to replace his tin ear...

Right Copyright Wrongs!

CAROLYN COLLINS WAS STUMPED. She'd need more memory than an elephant to digitize an entire soundtrack. But how else could she play original music with her multi-media sales presentation? She knew better than to steal copyrighted music for her work, but she couldn't carry a tune if you gave her a bucket! And her job depended on it.

★Enter SuperJAM!★ Soundtrack generator extraordinaire. With SuperJAM!'s library of song ideas, Carolyn wrote measure after measure of original music effortlessly. She created compositions to fit every frame of her presentation. Then she

synchronized SuperJAM! with other Amiga applications using specially-designed SuperJAM! Accessories!

Though her presentation came off without a hitch, Carolyn quit her sales job the very next day. Why? She moved to L.A. to become a musician, of course...

'Sno Problem!

MICHAEL MARTIN
LIVED IN AN IGLOO

in Snowball, Alaska. He loved his low air conditioning bills, but hated the loneliness. Once the lead singer for The Icicles, he lost his playing gig when the other three band members (and only other residents of Snowball) moved away. Since then Michael has longed for the day when he could sing with a band again.

★Enter (you guessed it) SuperJAM!★ Backup band and musical sketchpad! Using SuperJAM!, Michael created his very own MIDI band. Why, the heat of the music almost melted his ceiling! And since SuperJAM! can integrate entirely with BARS&PIPES PROFESSIONAL, Michael could take his compositions to the musical extreme.

It wasn't long until Michael was glad his buddies had moved away. SuperJAM!, you see, never threw up on his couch..

WARNING: USING SUPERJAM! MAY RESULT IN UNEXPECTEDLY GOOD MUSIC AND A STRONG TENDENCY TO MAKE TIME FLY! USE ONLY AS DIRECTED.

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SOUNDWORKS
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THINK ALL '040 ACCELERATORS ARE THE SAME?

THINK AGAIN!

As a high power Amiga® 3000/3000T user you need a 68040 accelerator board for one reason ... and one reason only ... SPEED!

And once you know what makes one 68040 accelerator better than another, the only board you'll want is the G-FORCE 040 from GVP.

WATCH OUT FOR SLOW DRAM BOTTLENECKS

Yes, all 68040 CPU's are created equal but this doesn't mean that all accelerator boards allow your A3000 to make the most of the 68040 CPU's incredible performance.

The A3000 was designed to work with low-cost, 80ns DRAM (memory) technology. As a result, anytime the '040 CPU accesses the A3000 motherboard, memory lots of CPU wait-states are introduced and all the reasons you bought your accelerator literally come to a screeching halt!

Not true for the G-FORCE 040...

SOLUTION: THE G-FORCE 040's FAST, 40ns, ON BOARD DRAM

To eliminate this memory access bottleneck, we designed a special 1MB, 32-bit wide, non-multiplexed, SIMM module using 40ns DRAMs (yes, forty nano-seconds!). This revolutionary memory module allows the G-FORCE 040 to be populated with up to 8MB of state-of-the-art, high performance, on-board DRAM. Think of this as a giant 8MB cache which lets the '040 CPU race along at the top performance speeds you paid for.

SHOP SMART: COMPARE THESE G-FORCE 040 SPECS TO ANY OTHER '040 ACCELERATOR

► 68040 CPU running at 28Mhz providing 22 MIPS and 3.75 MFLOPS!

NOTE: The 68040 incorporates a CPU, MMU, FPU and separate 4KB data and instruction caches on a single chip.

► 0 to 8MB of on-board, 40ns, non-multiplexed, DRAM. Fully auto-configured, user-installable SIMM modules lets you expand your A3000 to 24MB!

► DRAM controller design fully supports the 68040 CPU's burst memory access mode.

► Full DMA (Direct Memory Access) to/from the on-board DRAM by any A3000 peripheral (e.g. the A3000's built-in hard disk controller).

► Asynchronous design allows the 68040 to run at clock speeds independent of the A3000 motherboard speed. Allows easy upgrade to 33Mhz 68040 (over 25.3 MIPS!) when available from Motorola.

► Hardware support for allowing V2.0 Kickstart ROM to be copied into and mirrored by the high performance on-board DRAM. Its like caching the entire operating system!

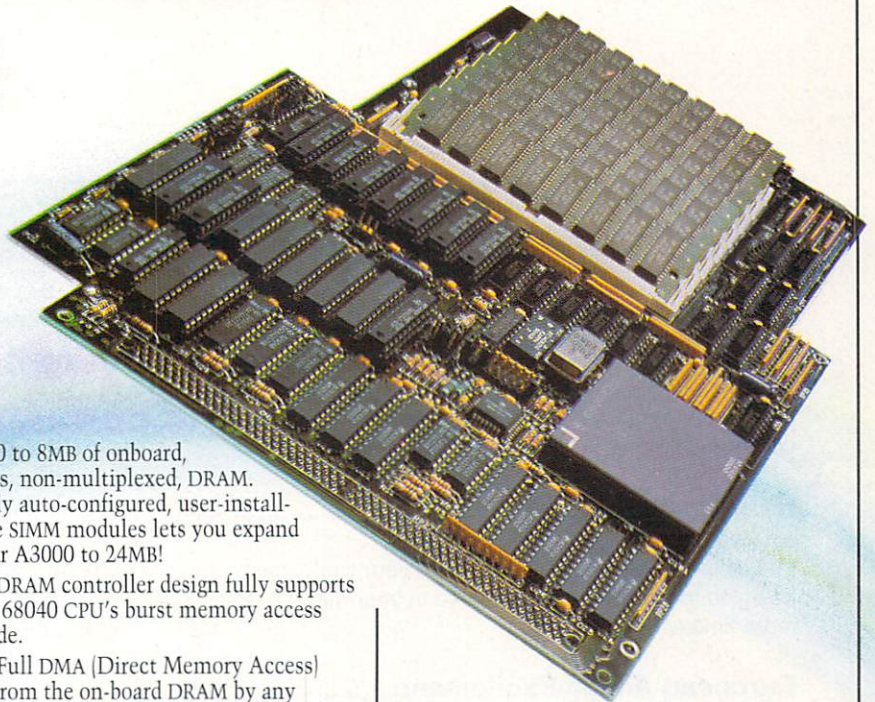
► Software switchable 68030 "fallback" mode for full backward compatibility with the A3000's native 68030 CPU.

► Incorporates GVP's proven quality, experience and leadership in Amiga accelerator products.

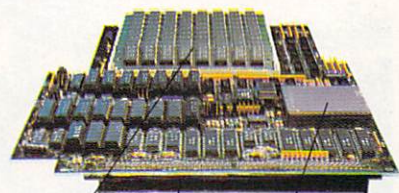
TRY A RAM DISK PERFORMANCE TEST AND SEE FOR YOURSELF HOW THE G-FORCE 040 OUTPERFORMS THE COMPETITION

Ask your dealer to run any "RAM disk" performance test and see the G-FORCE 040's amazing powers in action.

So now that you know the facts, order your G-FORCE 040 today. After all, the only reason why you need an '040 accelerator is **SPEED!**



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Up to 8MB of high speed (40ns) DRAM

Motorola 68040 CPU running at 28 Mhz

A3000 "CPU slot" connector

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Cover photograph by
Rick Hess

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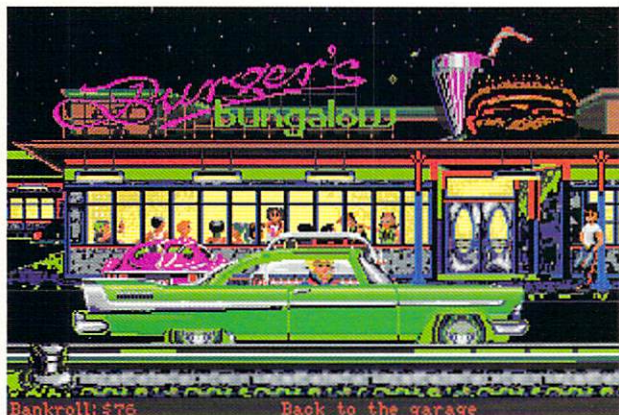
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Bankroll: \$75 Back to the garage
Street Rod 2 by Electronic Arts

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An example of computography on the Amiga by photojournalist Judith Geffer. (see page 96)

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THE AMIGA —A WORLD VIEW

Keeping pace with the Amiga market is a full-time task. In this issue, we have reports from both the extremely successful Amiga '91 exposition in Cologne (or Köln), Germany, and the very successful London Amiga event. Last issue we reported on the Oakland, California, AmiEXPO and COMDEX in Las Vegas. Next issue, we will be reporting on Canada's World of Commodore in Toronto. That means a lot of travel in a short time and a great deal of work.

Some readers may wonder why we make the effort to follow the Amiga marketplace around the world. The major advances in games, productivity software, graphics hardware, and video do not originate just from the United States and Canada, but also from Germany, the United Kingdom, Australia, and many other countries. *Amazing Computing* is now distributed in countries around the globe to Amiga users who want to do new and exciting things with their Amigas. It is our obligation to all readers to be vigilant of the newest releases and thus to provide them with the latest news.

At the same time, AC maintains its long-time high-level standard of both technical and beginner information. We have encouraged writers from around the world to submit articles, programs, tutorials, as well as interesting tricks and techniques on subjects such as AMOS, BASIC, C, Modula 2, video, desktop publishing, graphics, and more. I sincerely believe that it is this cross-pollination of ideas that will continue to promote the state of Amiga computing throughout the world.

My travels have provided a different perspective by which to judge the Amiga market in North America. When I see the tremendous turnouts for Amiga events in other countries, their size underscores the need to create these events in the United States. In truth, while U.S. exhibitions have been a platform to promote companies and products that are advancing the state of the Amiga—we have been reporting on their efforts and successes at each Amiga event—the events themselves have been growing less and less noteworthy.

Too Many Shows

There has been much controversy in the U.S. market over the excessive number of Amiga events. This problem is not evident in the PC or Macintosh markets, but seems to have become a major occurrence in the United States. Other main Amiga markets, Germany, The United Kingdom, Canada, and Australia have succeeded superbly with one or two main events, whereas in the United States, we have witnessed a battle between exhibitions which has not only confused the attendee, but has drained the Amiga vendors and exhibitors to the point where they must choose among events.

This is not a healthful situation. A major national exhibition for the Amiga should be an example of what the Amiga can do and the direction in which it is heading. This requires the attendance of a large majority of the Amiga vendors, providing new products, support, and demonstrations.

When AMIShows can draw over 75,000 attendees to the four-day event in Cologne, it demonstrates that the Amiga is a viable computer platform. When the same organization must announce that just over 10 percent of that figure attended the first California show in the San Francisco area in years, then there is a problem. While there are as many different opinions as to who is at fault as there are

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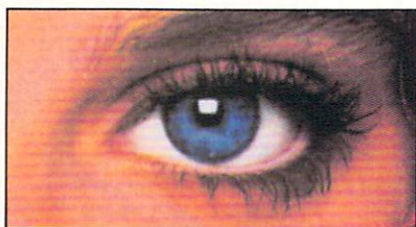
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With the optional A2000 genlock slot adaptor kit, it also perfectly complements and enhances the A2000. Check out these features, all packed on a single Amiga® expansion board!



► **Separate Composite and Component Video (RGB+Sync) Genlocks.** RGB genlock operates in the digital domain, for digitally perfect

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► **Simultaneous Component Video (RGB) Out, Composite Video Out and S-VHS Video Out.** Now, anything you can see on your Amiga monitor can be recorded on video tape,

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► To make sure you can take full and immediate advantage of every feature of your new Impact Vision 24 video-station, we even include the following software with every unit:

● **Caligari™-IV24.** An exclusive

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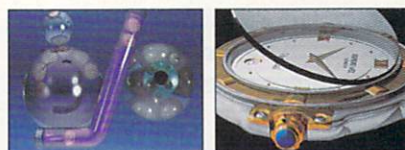
● **SCALA™-Titling.** Easy-to-learn, video titling package complete with lots of special fonts and exciting special transition effects. Turn your Amiga into a character generator.

● **MACROPAINT™-IV24.** A 2D, 16 million color paint program that lets you have fun



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● **Control Panel.** Provides full software control over all Impact Vision-24's numerous features. Use your mouse or simply

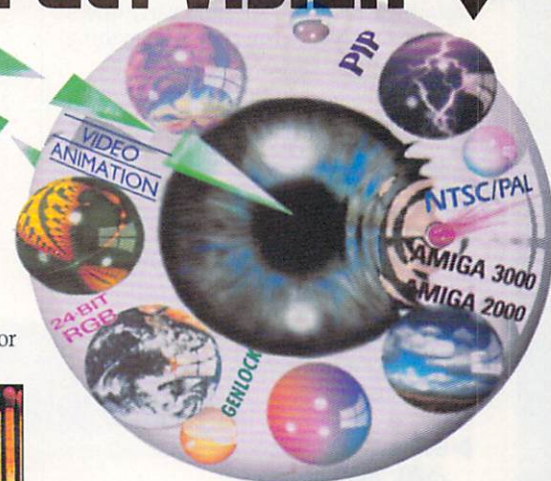


press a [configurable] "hot key" to activate any feature.

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For more information on how the Impact Vision 24 can have a major impact on your video productions, call us at 215-337-8770.

IMPACT VISION 24



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Don't waste your valuable time or money building a SCSI+RAM Controller from parts...

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- Custom chip design for the fastest possible data transfer rates and DMA performance—even in a multi-tasking environment.



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FAST RAM
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GVP Custom
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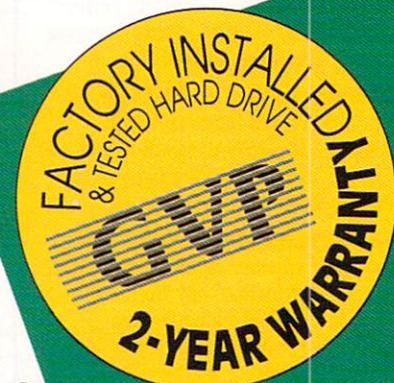
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- Fastest and easiest SCSI installation possible.

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Record, Edit, Compose . . .

With a high-quality stereo sound sampler, A fast, powerful, easy-to-use sound editor, And a self-contained 4-track sequencer.

For all the sound effects and music you could ever imagine.

► **Record** sound samples from any source, including voices, noise, and pre-recorded instruments, to create your own instruments and effects.

► **Edit** sounds quickly in real time. Add effects like reverb and echo, run sounds backward, alter wave forms, cut and paste sound segments, create loops, eliminate pops and scratches.

► **Compose** easily using the DSS 4-track sequencer and your Amiga or MIDI keyboard. Draw from up to 31 instruments at a time, in up to four octaves with 8 different variable effects. Mix and modify sounds in real time as you compose, through direct interface with the sound editor.

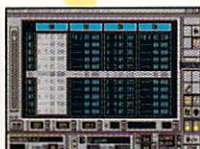
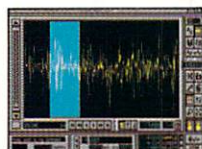
DSS Stretches the outer limits of 8-bit sound

- Create your own 4-track, self-playing musical compositions.
- Make soundtracks for home video, animation or visual presentations complete with voice-over, sound effects and music.
- Analyze voice patterns and stereo separation.
- Analyze graphic equalization of real-time sound.
- Remove "pops" from old phonograph recordings.
- Create custom instruments and sound effects by collecting and/or modifying pre-recorded instruments, voice, or sounds from any source, and use them in your own compositions.
- Save your sound and music to disk or send it out via modem for replay on any Amiga.

Check out these unparalleled features

- ✓ AmigaDOS 2.0 compatible; written in assembly language.
- ✓ Multi-tasking operation.
- ✓ 68020 and 68030 compatible.
- ✓ Comprehensive tutorial manual helps even beginners get started right away.
- ✓ Intuition-based graphic interface makes operation easy.
- ✓ MIDI-in capability.
- ✓ Direct interface between sequencer and editor.
- ✓ Hold 31 sound samples in memory at once — all shown on screen so they are easy to manipulate.
- ✓ Effects and processing capabilities include echo, mix, filter, re-sample, sound data inversion, playing sounds backwards, loops, fade-in/fade-out and more.
- ✓ Manipulate sound samples in real time, as you listen.
- ✓ Create sampled instruments with 1, 3 and 5 octaves.
- ✓ HIFI recording for highest quality playback.
- ✓ Controls for faster/slower playback and filtering high frequencies during playback.
- ✓ Load and save samples, songs and instruments in multiple formats.
- ✓ Multiple effects for each note.
- ✓ Stereo and monophonic operation. Also convert mono to stereo or separate stereo.
- ✓ Auto-playing music modules.

- ✓ Real-time oscilloscope and spectrum analysis.
- ✓ Real-time reverberation.
- ✓ Graphic editing of wave forms through easy-to-use functions, including zoom in/out and precision controls for position, frequency and amplitude.
- ✓ Draw sound waves freehand using the mouse.
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—Editorial Content

(Continues from p.4)

participants, it is fair to say that everyone deserves a piece of the blame. The real question is, How and why do we fix it?

The question became even more difficult when once again the main exhibition companies have announced two separate Amiga events for the same February weekend. This is a faithful echo of the turmoil caused twice in the last year by exhibition conflicts when in October of 1990 two Amiga shows were held the same weekend in Chicago, Illinois, and Anaheim, California, plus the emasculated events held just three weeks apart in New York city last spring.

Immediately after the announced dates, Amiga vendors began discussing the problems being generated by these two groups and the destructive effect it was having on the Amiga community. Gregg Garnick, vice president of Sales and Marketing for Great Valley Products, wrote a four-page letter

"I have opted to take action rather than sit back and watch."

—Gregg Garnick

addressed to both exhibition companies, Commodore, and a list of Amiga vendors. While Mr. Garnick repeated the concerns of other Amiga vendors, he was the first to put his concerns in writing, "I have opted to take action rather than sit back and watch. It would be in the best interest of all those reading this letter to just think briefly of the potential crowds that can be attracted to an Amiga event that is organized with the full backing of Commodore, Amiga Developers, Amiga User Groups, Amiga Publications, High Profile Amiga Users, Amiga Dealers, Toaster People, CDTV People, etc."

The Amiga Developer's Association also feared more of the same problems. In a letter written by Al Hospers, president of Dr. T's and president of the ADA, and me, we asked James Dionne, the president of Commodore U.S.A. to settle matters between the two show companies for the benefit of the entire Amiga community. A series of conditions was suggested by the committee. One of the strongest points to emerge was that Commodore must become a part of any national event.

This makes sense, for poor scheduling has become a problem for Commodore.

Struggling, ill-attended Amiga events make the Amiga look like a faltering computer platform even as the Amiga is doing well in spite of the U. S. economy and keeping a better pace than its competitors. Amiga events are also the best way to entice new developers as well as new users into the Amiga marketplace. Heavily and enthusiastically attended Amiga events embody the kind of evangelism needed in Commodore's expansion strategy for the Amiga.

By comparison, the events held in other countries, with the full and unequivocal support of the national Commodore sales organizations, have been enormously successful. This is apparent by the growing number of attendees and exhibitors at each year's event. This growth is due to the predictability of each event—events occurring at the same location and time each year—that allows Amiga vendors throughout the world to prepare products, specials, and introductions for these key events. Amiga users begin waiting for the national shows in their countries and carefully set aside time for full and faithful attendance.

We have not been able to establish this same style of dependability in the U.S. Last year only one exhibition out of four was held at the same location and time as in the previous year. The World of Commodore Amiga held at the Pier in New York city was the one site repeated last year; it is the one site of the shows announced for next season that will be further repeated.

Mr. Dionne took the charge he was given by the Amiga community very seriously. He talked with different exhibitors and with each show promotion company. On October 18, Mr. Dionne sent each company a letter which emphasized:

1. Commodore desires and has proposed an East coast and West coast show.
2. Commodore will not participate in the currently proposed February shows.
3. Commodore will exhibit in and will sponsor the World of Commodore Amiga show in New York, April 24-26, 1992. This show has been successful in the past. It follows the 1991 show, i.e., same location, same time.
4. Commodore requests that the Hunter Group and Ami EXPO cancel the February events and propose alternative show dates for L.A. in the fall. While Commodore cannot dictate how you manage your business, cooperation is at the heart of a successful show. Our fall decision will be based on the

resolution of the February show scheduling, the location and time of the fall show, and your plans regarding the quality and promotion of a fall event."

The points expressed in Mr. Dionne's letter were very clear. He has accepted the role that the Amiga developers have asked of him. He definitely wants the best for the Amiga market and feels that the participants should be willing to work with Commodore and the Amiga community to deliver the best for everyone. As of this writing, the Hunter Group has canceled its plans for the February event, while AmiEXPO has not yet announced a change in its schedule.

Mr. Dionne's call for cooperation in this effort is of particular interest to the Amiga community. The World of Commodore Amiga held in New York in April will be the first opportunity that the Amiga has had as a computer platform to be exhibited

"...co-operation is at the heart of a successful show."

—Jim Dionne

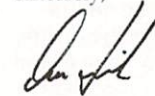
with the complete support of the entire Amiga community. It will be the one place where Amiga vendors can exhibit in a well-advertised, well-planned Commodore-supported national event.

As I have stated above, Commodore's support is essential for a national event. This process has worked well in other countries we have visited and it will do well here.

Mr. Garnick was extremely accurate in stating further in his letter, "The Amiga is on the rise in the U.S., not the decline! Commodore U.S.'s and GVP's sales figures back up this statement. Now is not the time to hold grudges but a time to come together and make some real impact."

Needless to say, World of Commodore Amiga held in New York in April is one event no one will want to miss.

Sincerely,

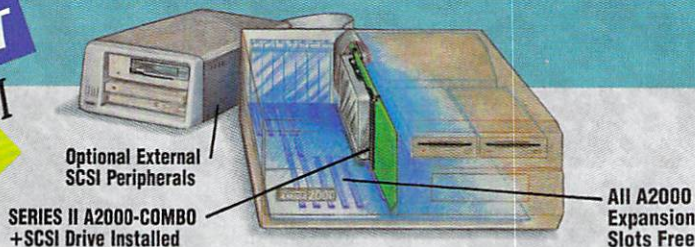


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Managing Editor

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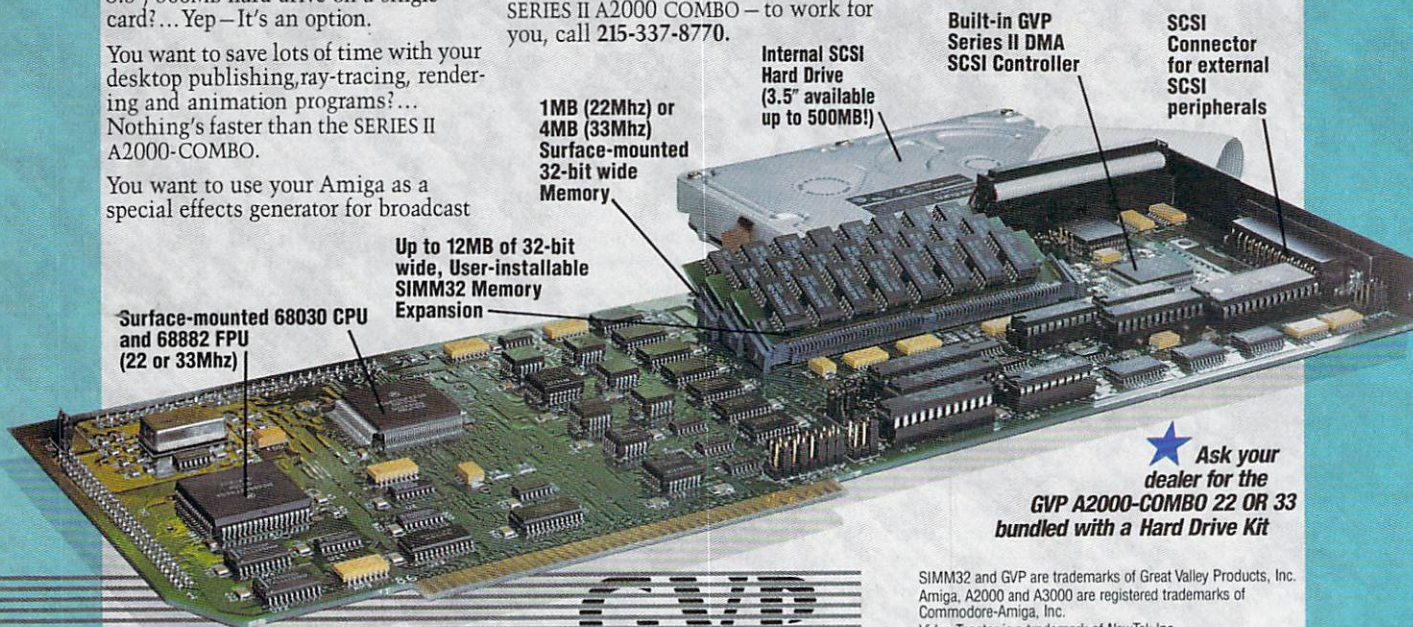
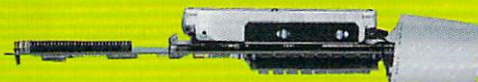
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New Products

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• Software •

Aegis Spectracolor for HAM-E

This powerful HAM paint program now supports Black Belt Systems' HAM-E graphics expansion system. All the features of SpectraColor, including key frame animation with freehand or straight-line paths, brush wraps, luminosity, and density and light source direction controls. It can load virtually every picture type and also features a point-and-click interface, a color manager for selecting among the 262,144 colors of the HAM-E system, brush animation and effects, and a number of tools. Owners of the original Spectracolor can upgrade for \$29.95. *Suggested retail price: \$99.95, Oxxi/Aegis Inc., P.O. Box 90309, Long Beach, CA 90809-0309, (213) 427-1227, Inquiry #210*

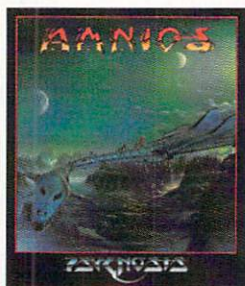
AmigaVision 1.70Z

CBM's icon-based authoring language has been upgraded from the earlier 1.53G version. New features include the ability to chain applications together with simple icon control, an upgraded standard music file with support for temp, dynamics, and chords, and new drivers for laserdisc players and the NEC PC VCR. Additional peripherals can be driven from the serial port and six new functions are in the expression editor. Current owners of AmigaVision can send their original program disk and a check for \$35.00 to the address below. *Suggested retail price: \$149.95, Commodore Business Machines, AmigaVision Upgrade, P.O. Box 18370, Memphis, TN 38181, Inquiry #211*

Amnios

Controlling a tiny ship, fight your way through each of ten deadly living worlds trying to either destroy the planet's vital organs or rescue a given number of encapsulated humanoids. As a

defense, each planet dispatches hordes of Biobeings to put an end to your fight for freedom. However, destroying certain of the planet's organs will affect the number and style of the Biobeing's attack formations. Should you reach your target on each planet, then it, in a last ditch attempt to destroy you, uses what resources it has left to create a Guardian. Destroy this beast and it's on to the next, deadlier planet. *Suggested retail price: \$49.99, Pysgnosis, 29 St. Mary's Court, Brookline, MA 02146, Inquiry #214*



Art Department Professional 2.0

ASDG's new version of ADPro has many new "firsts" for the Amiga. ADPro offers implementation of the JPEG image compression technology, uses any printer supported by the Amiga operating system to create color prints with 24-bit plane accuracy or gray scale prints with 8-bit plane accuracy. Other new features include a universal loader which detects and decodes most image file formats, more WYSIWYG operators, an enhanced color technology for greater precision and higher speed, and user interface enhancements which make use of Kickstart 2.0, if present. Upgrades for registered users at available for \$75. *Suggested retail price: \$299.00, ASDG Inc., 925 Stewart St., Madison, WI 53713, (608) 273-6585, Inquiry #212*

AudioMaster IV

This new digital sampling and editing software can sample and play sounds at a true 56,000 samples per second in stereo. AudioMaster will drive every parallel-port digitizer now available for the Amiga—often with higher sampling rates than the digitizer's own software. Other features include the ability to load up to 180 sound files at one time, compressed file storage format, two to four times oversampling, digital filtering, loop sequencing, editing, and audio special effects. *Suggested retail price: \$99, Oxxi/Aegis Inc., P.O. Box 90309, Long Beach, CA 90809-0309, (213) 427-1227, Inquiry #213*

Back to the Future Part III

Based on the box office smash, step into 1885 for more shoot 'em up arcade-style action. Marty McFly has been summoned to the wild 19th century West to save Doc Brown from becoming history before his time. It's up to McFly to showdown with "Mad Dog" Buford and his band of black hats to see whose name will materialize on the tell-tale tombstone.

The action-packed scenarios get progressively more challenging based upon the action in the movie. Rescue Clara from a runaway horse-drawn carriage while dodging cross-fire from an Indian ambush and a bank robbery in progress. Use your quick-draw skills and score enough points in the Shooting Gallery to make it to the next level. Sling pie trays at bad guy Buford and his thugs while they shoot at you in the middle of town square. Take control of a speeding locomotive to help get the DeLorean up to speed and back to 1985. *Suggested retail price: \$39.95, Konami, 900 Deerfield Parkway, Buffalo Grove, IL 60089, (708) 215-5100, Inquiry #215*



Barbarian II

As the dust settles after Hegor's glorious triumph over the evil Necron, his minions chant resurrective incantations in an effort to revive their slain king. Once reinstated, Necron will once again lead his evil servants against the forces of the living, in an attempt to overrun the world with horribly mutated servants of evil. As Hegor the Barbarian, face the malevolent magic of Necron. Fight through the dark forest, proceed through the barbaric landscape, dodging deadly traps and dealing with dastardly enemies before entering the final conflict with Necron, deep within the evil Temple sanctuary. Destroy Necron and his evil minions before they completely overrun the human race. *Suggested retail price: \$44.99, Pysgnosis, 29 St. Mary's Court, Brookline, MA 02146, (617) 731-3553, Inquiry #216*

BeBop 'N Drop

BeBop 'N Drop is a graphical puzzle game, the next generation of the popular shareware game Obsess-O-Matic. The object is to fit falling pieces together forming horizontal rows, which then disappear off the board. If the pieces reach the top of the board, then the game is over. Fifty one-player and 25 two-player game boards are organized for tournament or single board play. Each board has a unique shape containing tricks, traps, and possible secret solutions. Board utilizes piece sets, where shapes, color graphic bit-maps, digitized stereo sounds, and animations vary. Special effects such as the pile driver, firestorm, and the column fillers add enjoyment to game play. *Suggested retail price: \$34.95, Palomax, Inc., 424 Moreboro Rd., Hatboro, PA 19040, (215) 672-6815, Inquiry #217*

BibleScholar

EasyScript has improved their Bible study program, featuring many new improvements. A context search allows the user to find any combination of words in an instant, multiple windows can be open at once, and a work pad that allows combining and expanding the provided library of topical references. A smart map features allows the user to click on an area of interest from the

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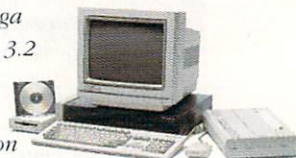
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incorporated maps and instantly view related verses. The exhaustive concordance, topics, and King James translation are included. *Suggested retail price: \$149.95, EasyScript Software, 10006 Covington Dr., Huntsville, AL 35803, (205) 881-6297, Inquiry #218*

Broadcast Fonts 3D

Broadcast Fonts 3D is now shipping in a Lightwave 3D edition. The package consists of three volumes, containing a total of nine complete 3-D object font sets in a variety of traditional styles. As with the Imagine edition, each character supports phong shading for the best possible appearance, no matter what angle or view. A free demo disk and nominally-priced demo video are available as well. *Suggested retail price: \$149.95/9 font set or \$49.95 per volume, Unili Graphics, 143 Lorraine Ave., Pittsburg, CA 94565, (510) 439-1580, Inquiry #219*

DeluxePaint IV

The #1 paint and animation program just got better. New features include the ability to paint and animate with all 4096 colors in Amiga's HAM mode. A LightTable mode lets the user display multiple frames under the current frame and creates in-between frames for smooth flowing animations. See through the frame you are working on to three additional frames and the spare page—in color. Metamorphosis instantly transforms any shape and image of one brush into any other brush. A new easy and powerful animation control panel sports a VCR-style interface. This means no more searching through the menus for the animation controls you need. Other features include enhanced gradients, an all-new color mixer, a powerful stencil paint mode, rich tinting, and translucency. Owners of DeluxePaint IV for \$60. *Suggested retail price: \$179.00, Electronic Arts, 1450 Fashion Island Blvd., San Mateo, CA 94404, (415) 571-7171, Inquiry #220*

Digital Designs Group

Three new titles have been added to DDG's line of multimedia graphics. *Worldwide Maps* and *More Worldwide Maps* combine to offer over 440 files for U.S. and World maps. All 50 states, Africa, the Middle and Far East, Canada, and more are included. Land area, globe, and world maps are some of the formats. The third title is called *Auto Race Thrills*. It provides automotive sports enthusiasts with 39 digitized and artistically rendered graphics of NASCAR, NHRA, dirt track modified, SCCA and Indy 500 style racing images in both 352 x 480 and 704 x 480. All digitized images were converted directly from 24-bit files. *Suggested retail price: \$39.95-\$49.95, Digital Designs Group, MDG Studio II, Hwy. US 701, Whiteville, NC 28472, (919) 642-6295, Inquiry #221*

Flames of Freedom

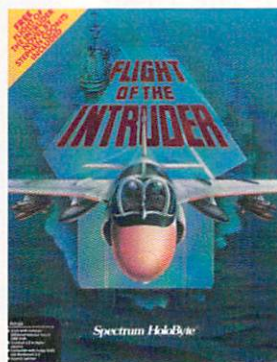
The snow of Midwinter has begun to thaw and its citizens must search for a new home to escape the impending floods. The land is dominated by a cruel, oppressive government so powerful, it can only be dominated from within. It's up to you to promote discontent and revolution among the empire through covert operations.

Three different play modes—training, solo mission, and campaign—are featured. Variable mission options include rescuing political leaders, destroying shipping convoys, sabotaging power stations, ambushing imperial troops, and other sub-missions. *Suggested retail price: \$49.95, Microprose, 180 Lakefront Dr., Hunt Valley, MD 21030, (301) 771-1151, Inquiry #222*

Flight of the Intruder

This new game from Spectrum Holobyte is based on the best-selling novel by Steven Coonts. The game features A-6 and F-4 jets, based on Coonts' experiences as a navy pilot in the Vietnam conflict. Flying either an A-6 Intruder or F-4 Phantom in the computer simulation, players are sent into combat from their base on the carrier U.S.S. Shiloh. There are multiple missions in which the pilot is usually part of a larger operation undertaken by one of the several sections of aircraft.

Typical enemy targets of these daily bombing missions are strategic bridges, power supply plants, docks, and shipping facilities. Take on the role of the Mission Commander and keep up with the ever-changing action. *Suggested retail price: \$59.95, Spectrum Holobyte, 2061 Challenger Drive, Alameda, CA 94501, (415) 522-3584, Inquiry #223*



FractalPro V 5.0

FractalPro is a fractal art and animation program for the Amiga, exploiting HAM graphics, 256-color Mandelbrot, Julia, and cube set images, and smooth animations. New features include 68881/882 math coprocessor and 68040 compatibility, four complete new fractal formulas, an ARexx port for remote control via ARexx script or AmigaDOS command scripts, renders and saves in 24-bit hi-res images, and more. *Suggested retail price: \$149.95, MegageM, 1903 Adria, Santa Maria, CA 93454, (805) 349-1104, Inquiry #224*

Genesis The Third Day

Create landscapes of real locations, using authentic government data, or imaginary locations. Some of the features of this fractal landscape generator includes control over all fractal parameters—fractal dimension, roughness, height, river networks, lakes, sea level, contour heights, shading, position of the sun, and more. There are also animations capabilities through script commands for a drawing a series of pictures using keyframes, five draw modes, ARexx compatibility, and various file support for most 3-D modeling and animation pro-

grams. *Suggested retail price: \$149.95, Microillusions, P.O. Box 3475, Granada Hills, CA 91394, (818) 785-7345, Inquiry #225*

Hard Nova

Assume the identity of the toughest mercenary in the frontier system, a woman called Nova, or a man called Stark. Dangerous, high-paying jobs flourish on the frontier. Run guns, kidnap world leaders, assassinate corporate presidents, or engage in guerilla warfare. Recruit a new gang of pilots, gunners, programmers, and engineers. You'll need brains and brawn to unravel an escalating plot of interstellar aggression. *Hard Nova* features three different real-time combat systems. Fight indoors with blasters and grenades, dogfight in hoverships as you hug the contours of a rocky planet, and fire mega-cannons and guided missiles in space combat. Talk to aliens face to face. Lead your party indoors with top-down views of bars and casinos, colony cities, security gauntlets, or alien spacecraft. Fly over 3-D landscapes and planet surfaces, with many different planet types to explore. *Suggested retail price: \$49.95, Electronic Arts, 1450 Fashion Island Blvd., San Mateo, CA 94404, (415) 571-7171, Inquiry #226*

Home Alone

This two-phase action game, based on the smash movie, puts the player in the role of eight-year-old Kevin, trying to foil the break-in of those two inept burglars, Harry and Marv. First, rush through the house, creating different traps and pitfalls. You'll find innumerable household items to aid in your defense. Then, Harry and Marv, the wet bandits, come bumbling in for a hilarious chase. "Bag" the burglars and score. Digitized pictures from the movie, animation, slapstick humor, comic twists, and infinite variations are included. *Suggested retail price: \$39.95, Capstone/Intracorp, 14202 SW 136th St., Miami FL, 33186, (305) 252-9040, Inquiry #227*

IDS Multiboard

The IDS Multiboard, a multi-user BBS, offers multi-user support for up to 32 simultaneous online users, a full-featured CB Simulator,

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New Products

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remote AmigaDOS CLI access, and real-time user editing. It also sports an open architecture design, allowing programmers to add unlimited features to the system.

When operating in multi-user mode, users can conference in 4 separate CB channels, and pass private on-line messages between each other. *Suggested retail price: \$249.99, Intercore Development Systems, P.O. Box 76, Nesconset, NY 11767, (516) 361-6998, Inquiry #228*

Kaleidokubes

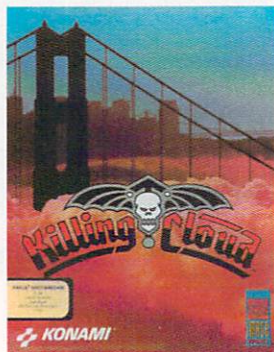
Kaleidokubes is an addictive mind-bender whose game concept appears simple at first, but becomes more complex as the game board fills and the game clock winds down. Similar to color dominoes, the goal is to match the color sides of a randomly generated kube with the kubes already placed on the playing board. The more sides you match, the greater your score. You can play against the computer, another person, or against the clock. There's also an option to save and design your own playing boards. The program has three levels of difficulty and records high scores and best times for all game boards. The game also multitasks, installs on a hard disk, and features digitized sound effects. *Suggested retail price: \$24.95, Artworx, 1844 Penfield Rd., Penfield, NY 14526, (716) 385-6120, Inquiry #229*

Killing Cloud

Enter San Francisco in the 21st century. Citizens live above the mist, yet under a cloud. As a member of the San Francisco Police Department, your assignment is to descend into the poisonous mist in your XB500 hoverbike, capture the Black Angels ring-leaders, and solve the mystery of the cloud that kills before San Francisco gasps its final breath. Choose from a number of weapons to equip your XB500

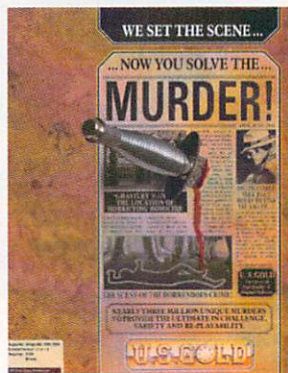
hoverbike and navigate it through an urban obstacle course. Dog-fight with the enemy and arrest suspects, using their info to hunt down accomplices and prevent enemy attack.

Killing Cloud offers a unique combination of crimefighting role play and flight simulation. Super mood-setting music and sophisticated sound effects add to the excitement of the game. *Suggested retail price: \$49.95, Konami, 900 Deerfield Parkway, Buffalo Grove, IL 60089, (708) 215-5100, Inquiry #230*



Murder!

Murder!, a new strategy game developed in the tradition of a suspenseful Agatha Christie novel, is for gamers who love a good, vintage murder mystery, especially on dark and stormy nights. Each case begins with the announcement of the chilling murder on the front page of the local newspaper. Search the house, interrogate suspects, investigate clues, and reap the rewards of pinning the crime on the murderer. Act too hastily, accuse the wrong suspect, and your days as a detective are over. Each case can be tailored by setting or changing the four different variables on the newspaper—the date, year, name and type of house, and the difficulty level. Each time one of these variables is changed, an entirely new murder case is created. Players have just two hours to find the clues to solve the crime before the murderer escapes the house. *Suggested retail price: \$44.95, U.S. Gold, 550 S. Winchester Blvd., San Jose, CA 95128, (408) 246-6607, Inquiry #231*



Pacific Digital products

Four new multimedia construction sets are now available from Pacific Digital. *StarsFX* is a user-navigated moving starfield flyby animation kit. You can experiment, create, design, fly, record, save, playback, combine, and change patterns and colors and sounds.

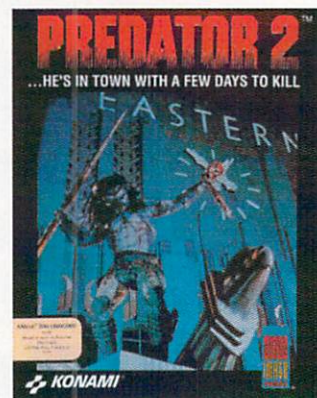
MultimediaFX is a sound effects synthesizer with video image synchronization. Compress video sequence images, and make wild new sounds and beats. Other features include sound controls image sequencing, create, save, and playback.

SpectrumFX is a sound spectrum analyzer and display maker. See instant harmonic spectrums from any sound source (FFT) and graph any viewpoint in 3-D to see spectrum dynamics over time. *VocoderFX*, an audio sample signal effects processor and explorer, takes sound files of two sounds and combines them in unique ways to discover new timbres and tones. Create great alien sounds, and more. *Suggested retail price: \$29.95 each, Pacific Digital, 6 Stetson Dr., Kentfield, CA 94904, (415) 457-8448, Inquiry #232*

Predator 2

Take on the role of veteran cop Mike Harrigan, a man hardened by years of contending with the seamiest side of the streets. Shoot it out with machine gun-toting drug lords and the Predator, a brutal alien who finds sport in the killing of human prey. The beast is visiting L.A., with a few days to kill. It has laser bolts, slicing discs, and a camouflaging device to allow him to move

through the streets undetected. Collect powerful weapons to save your fellow officers and avoid the innocent civilians and news reporters to save your badge. Battle through a street war between drug gangs, a kingpin's penthouse apartment, a subway train shoot-out, and track the Predator to his lair—a human slaughterhouse. Use streetwise ingenuity and devise a way to destroy the creature's invisibility mechanism. This action game also features digitized movie scenes. *Suggested retail price: \$19.95, Konami, 900 Deerfield Parkway, Buffalo Grove, IL 60089, (708) 215-5100, Inquiry #233*



Presentation Master

Design, display, and output your own multi-media presentations with Presentation Master. Import bit-map and EPS images, data for charts, and text. It also features object-oriented paint and business graphing modules, a color PostScript output and graphic presentation authoring environment, and a freely distributable slideshow program to play your creations. 2MB of memory is required. *Suggested retail price: \$399.95, Oxxi/Aegis Inc., P.O. Box 90309, Long Beach, CA 90809-0309, (213) 427-1227, Inquiry #234*

Prophecy: Viking Child

Introducing the prophecy series, a trilogy of unique arcade action-style adventures designed by Imagitec, a development team in Europe. Our hero, Brian, is featured in each volume during a separate stage of his life. In *Viking Child*, Brian is a child and he learns of his heroic destiny from

7 Steps to Excellence

1 START WITH A POWERFUL TEXT EDITOR

PageLiner makes typing easy, with a real WorkBench 2 interface and powerful formatting options.

PageLiner

2 USE THE BEST AMIGA ILLUSTRATOR

You should turn to the best Amiga illustrator to create your drawings. Art Expression combines features like auto-tracing, text-in-shape and blend to give you total creative freedom.



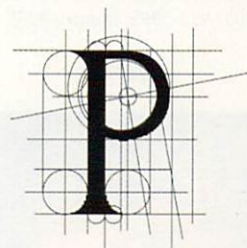
ART EXPRESSION

3 PUT THEM TOGETHER WITH PAGESTREAM

Other programs claim to be the ultimate in desktop publishing, but only PageStream constantly leads the way with more features than any other program. And PageStream 2.2 is the best release yet!

4 CAN YOU COUNT TO 600?

Desktop publishing is nothing without fonts, and we have more than anybody else. The Soft-Logik Typeface Library has 600 PostScript Type 1 fonts!



5 SO YOU CAN'T DRAW.

Let's face it, some of us shouldn't be allowed to use pencils or brushes. That's why we're introducing the Soft-Logik Graphic Library, with 15 volumes of amazing PostScript graphics.



6 TOUCH UP PICTURES

BME is an amazing new program to crop and edit bitmap pictures. Zoom in and clean up your scans pixel by pixel!



7 HOTLINK YOUR DTP SYSTEM!

Software tools are great, but it's time they started working together. That's why we've created HotLinks for the Amiga. HotLinks is an Inter-Program Communications system which lets your programs exchange data in real time, on one computer and across networks. So instead of spending time importing text and graphics, you can spend more time being creative.

HotLinks >>

"the Amiga desktop publishing king of the hill." — AmigaWorld

"a jewel of a program." — Amazing Amiga

"PageStream delivers outstanding performance at an outstanding price." — .info

"the heavyweight champion." — AmigaUser International



Soft-Logik Publishing Corporation • We give you the tools to dream.

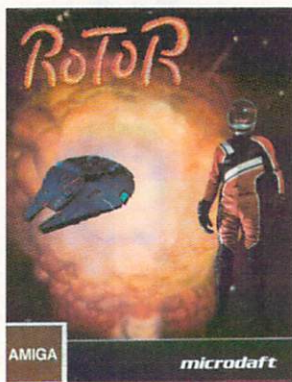
PageStream 2.2, HotLinks, BME and PageLiner: winter '91. Art Expression: coming soon. Call us for more information: 1-800-829-8608

Circle 156 on Reader Service card.

New Products

8 Other Neat Stuff

the Wizard Odin. He sets out to rescue his family from the Evil God Loki. First, he must do battle with hundreds of strange and terrible villains, and defeat the eight apprentices of darkness. Along the way, you'll hear 22 pieces of original music in 16 challenging levels. *Suggested retail price: \$49.95, Gametek, 2999 N.E. 191st., N. Miami Beach, FL 33180, (305) 935-3995, Inquiry #235*



Rotor

Microdaft announces Rotor, a strategy-oriented arcade game, where you are in command of a highly sophisticated Rotor craft, flying solo through enemy fortresses in an effort to destroy their primary defense systems. Along the way, collect fuel and energy to power advanced Rotor features. There are 18 missions, with a password system to resume play on higher levels. *Suggested retail price: \$39.95, Microdaft, 1012 South Main St., Taylor, PA 18517, (717) 562-0650, Inquiry #236*

Soft-Logik Typeface Library

600 fonts, in PostScript Type 1 format, are available for use with PageStream 2 and any PostScript font-compatible application. With PageStream 2, even dot-matrix, ink jet, and non-laser owners can use these fonts. A few fonts are sold in PostScript Type 3 format,

which can be used only with PostScript printers.

The Soft-Logik Typeface Library contains four bundles: Newsletter Fonts, Starter Fonts, Classic Fonts, and Designer Fonts. *Suggested retail price: Newsletter Fonts, Starter Fonts (each contain eight PostScript fonts) \$99.95. Classic Fonts, Designer Fonts (each contain 16 PostScript fonts) \$199.95, Soft-Logik, P.O. Box 290070, St. Louis, MO 63129, (800) 829-8608, Inquiry #237*

Starflight 2

The Spemin, an arrogant race of slimy blobs, are back in Starflight 2: Trade Routes of the Cloud Nebula—with new weapons, unlimited fuel, and grand hopes of turning the universe into a giant petri dish. You've got charm, wits, and a hot starship, but unless you discover the source of their fuel and technology, everyone will be serving mucous cocktails to the Spemin overlords. Inspired by the original Starflight, there are 29 new alien species and over 500 new worlds to explore. *Suggested retail price: \$49.95, Electronic Arts, 1450 Fashion Island Blvd., San Mateo, CA 94404, (415) 571-7171, Inquiry #238*

StudyWare for the GRE

StudyWare for the GRE, a software preparation program for the Graduate Record Examination, is now available for the Amiga. The package also contains a copy of Cliffs GRE Preparation Guide. StudyWare has integrated the Cliffs book into the software design by having the computer score and diagnose both full-length tests from the Cliffs book. The software automatically tallies your score and determines your strong and weak areas. 22 different GRE topics will be covered with hundreds of on-screen questions, 2 StudyWare and 2 Cliffs full-length exams, and complete on-screen explanations for correct and incorrect answer choices are some of the features. It also includes true math symbols, graphs, and on-screen hints. An on-line glossary pops up with a keystroke or a mouse click. Reports and charts of one's improvement can be generated and printed out after each test. *Suggested retail price: \$49.95, StudyWare, 4805 Murphy*

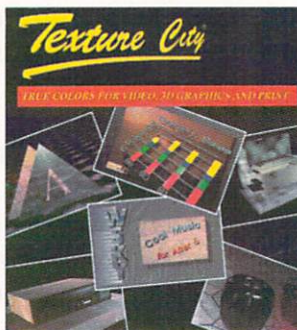
Canyon Rd., Suite A, San Diego, CA 92123, (619) 495-0190, Inquiry #239

The New Testament

Finally, a quick and easy way to study the King James version of the New Testament on the Amiga. Features include a quick word or phrase search, a simple user interface, a bookmark feature, fast text scrolling, multitasking options, a print-all command, and more. *Suggested retail price: \$39.95, Shocking Software, 3535 N. Nevada, Chandler, AZ 85225, Inquiry #240*

TRexx Professional

This is a tool that no Toaster owner should be without. It allows you to quickly and easily create very complex AReXX scripts for controlling every AReXX-controllable aspect of the Video Toaster and other external devices attached to the serial port of your Amiga. Scripts can also have loop points, making demos a snap to create. Access any AmigaDOS command from within a script and run the scripts from the CLI, or from a Workbench icon. All Toaster AReXX commands are supported and TRexx Pro is AmigaDOS 1.3 and 2.0 compatible. *Suggested retail price: \$79.95, Kludgecode Software, P.O. Box 1163, Holland, MI 49422-1163, (616) 786-0740, Inquiry #241*



True Colors for Video

Texture City announced the release of new high resolution true color 24-bit images for computer artists and designers. Texture City's extensive True-Color library provides the ultimate in digital production images. The pro quality textures include animal skins to scenics, quarry marble to metals, hand-blown glass to special effects, and more.

Each image has been carefully selected and hand-processed for the ultimate in image quality. There are five different packages for the Amiga platform. Three packages include a selection of 40 images and are available as 24-bit IFF, DCTV, or HAM formats. The other two packages have 15 images each in 24-bit IFF format. *Suggested retail price: \$139.95-\$299.95, Texture City, 3215 Overland Ave., #6167, Los Angeles, CA 90034, (213) 836-9224, Inquiry #242*

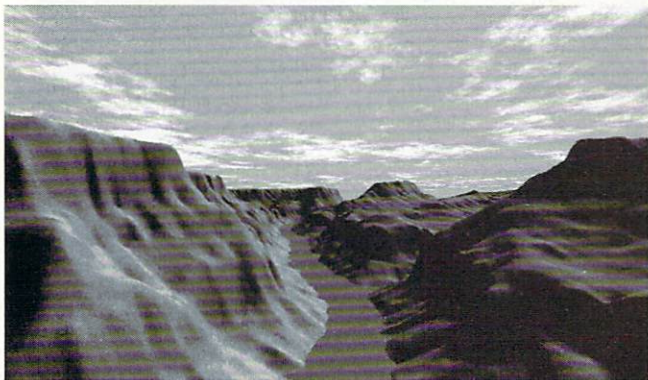
Trump Castle II

Multiplayer capabilities, digitized photos, and more make Trump Castle II: The Ultimate Casino Gambling Simulation the new standard for casino computer programs. Trump Castle II offers six popular gambling games—baccarat, blackjack, craps, roulette, video poker, and slots—each with realistic game play for up to four players.

As you move around the casino, catch conversations around the gambling tables and explore the luxurious facilities and accommodations of this deluxe resort by the bay. Game play follows the rules and regulations of the New Jersey Casino Commission. A Trump Castle Gaming Guide and a discount coupon to stay at the resort comes with the program. *Suggested retail price: \$49.95, Capstone, 14202 SW 136th St., Miami, FL 33186, (305) 252-9040, Inquiry #243*

Vikings: Fields of Conquest

Vikings: Fields of Conquest is a 1-6 player, 199-territory land conquest game. Flotillas, armies, castles, catapults, and seven different troop types are available for your command. Become the sole ruler and King of England and save it from the Viking invasion! Vikings also uses the full power of the Amiga and utilizes the 64-color extra-halfbrite mode. 1MB is required and it is fully compatible with AmigaDOS 2.0. *Suggested retail price: \$59.99, Realism Entertainment, 6522 Pine St., Bensenville, IL 60106, (708) 595-7487, Inquiry #244*



Animate the real world!

New! With **Scenery Animator** you can create incredibly realistic animations of real world or imaginary fractal landscapes. It's easy to use and has many powerful features not found in other software. See it at your local dealer today and take a test flight.

- * 3-D control of camera path
- * All resolutions and IFF24
- * Unlimited landscape size
- * Includes animation editor
- * Map shows overhead view
- * Instant preview window
- * Color and lighting control
- * Requires 2 megabytes

Natural Graphics

P.O. Box 1963, Rocklin CA 95677 (916) 624-1436

Circle 132 on Reader Service card.

• Hardware •

Alfred Robot System

The Alfred Robot System is designed to teach the principles of robotics. It meets the need for a low-cost robot for educational use in schools, colleges, and industrial training departments. The system is designed to be easily expanded in order to meet new technological requirements.

The complexity of exercises that can be carried out will benefit school children who are being introduced to robot technology or technical college students requiring an in-depth understanding of industrial robots. Alfred can also provide stimulating activities for disabled people.

Software provides for the learning, storing, and re-playing of robot movements so that a complete sequence can be built up in step-by-step fashion. Motor positions are displayed, allowing the student to relate actual

software instructions to robot positions. The system effectively parallels the use of larger robots used in industry. Process Control, the robotics software for the Commodore Amiga, is included. *Suggested retail price: unavailable, Think Limited, Prudential Buildings, 46C High Street, Erdington, Birmingham, B23, (021) 384-4168, Inquiry #245*

G-Force 040 Board

GVP unveiled a 68040 accelerator for the Amiga 3000 and the 3000T which runs at 28Mhz, includes MMU, FPU, and separate 4Kbyte data and instruction caches, providing incredible 22MIPS workstation performance.

G-Force 040 comes standard with 0MB RAM, but can be configured with 4 or 8 MB of 40ns 32-bit custom SIMM modules, giving the accelerator unbelievable speed. There is also a software-switchable fallback mode, which allows the A3000 to revert to its

native 68030 CPU for full backward compatibility. *Suggested retail price: \$2799, Great Valley Products, 600 Clark Ave., King of Prussia, PA 19406, (215) 337-8770, Inquiry #246*

PACE

PACE (Professional Animation Control Engine) is a V-LAN compatible, frame accurate animation controller in one "stackable" package for your desktop. PACE is a 19" unit that can be rack mounted or placed beside your Amiga. The V-LAN compatible transmitter connects to the Amiga's serial port and the V-LAN receiver connects to the remote connector of your VTR or laser disc player. *Suggested retail price: \$3195, Videomedia, 175 Lewis Rd., San Jose, CA 95111, (408) 227-9977, Inquiry #247*

Triple Play Plus MIDI Interface

This new sophisticated MIDI interface features three separately-addressable MIDI outs, allowing for 48 simultaneous MIDI channels at a time. Triple Play includes one MIDI in and one MIDI thru. It is designed to accommodate Bars&Pipes Pro and special MIDI Out Tools will also be available. *Suggested retail price: \$189.00, Blue Ribbon Soundworks Ltd., 1293 Briardale NE, Atlanta, GA 30306, (404) 377-1514, Inquiry #248*

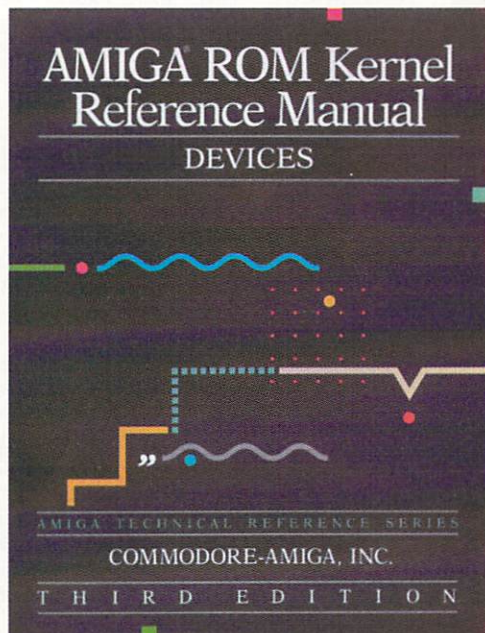
New Products

& Other Neat Stuff

Vortex ATonce Plus

Vortex ATonce Plus is the new, high performance AT-emulator with a 16 MHz, CMOS 80286 16-bit processor for the Amiga 500 and 500 plus. Each unit is supplied with a 512K Vortex FAST RAM and a socket for an optional 80C287-12 arithmetic co-processor. The performance, especially with calculating programs that need arithmetic power, will be improved. ATonce Plus runs in the multitasking environment of the Amiga and is tested with all MS-DOS versions from 3.2 to 5.0 and DR-DOS 5.0 and 6.0. Without any additional RAM, ATonce Plus makes 640K DOS memory available. In Amigas with more than 1MB RAM, it is possible to install extended or expanded memory, such as additional program memory or a ramdisk. Windows 3.0 and Lotus 1-2-3.

ATonce-Plus works autoconfiguring autobootable Commodore compatible hard disk systems that use an Amiga-



New Products

& Other Neat Stuff

DOS-compatible hard disk driver, as well as with 3.5" and 5.25" floppy drives with 720K/360K. ATonce Plus emulates the CGA with 16 colors, the Hercules, the Olivetti and the Toshiba T3100 graphics cards, and one EGA/VGA monochrome-graphic mode. It also installs without any soldering directly into the socket of the 68000 CPU. Both expansion ports remain free and emulation and installation software and a detailed user's manual are included. *Suggested retail price: \$448, Vortex Computersysteme, Falterstrabe 51-53, D-7101 Flein bei Heilbronn, Germany, (011) 49-713-159-720, Inquiry #249*

• Books & Video •

Amiga ROM Kernel Reference Manual: Devices

This book, written by the experts at Commodore-Amiga, Inc., presents tutorials and detailed examples showing how to use the Amiga's system device interfaces. This new edition has been completely revised and updated for AmigaDOS 2.

A comprehensive introductory section for the novice device programmer, complete coverage of all the Amiga's system devices with new information on the enhanced Clipboard, Console, Keyboard, Timer, and Tackdisk devices. Finally, there is an expanded description of Amiga resources and a new section on the SCSI device. There is also a complete listing of the IFF specification. The book is an indispensable source of information on how to use advanced I/O capabilities. *Suggested retail price: \$28.95, Addison-Wesley, 1 Jacob Way, Reading, MA 01867, (617) 944-3700, Inquiry #250*

DeluxePaint IV Videos

Saddleback Graphics announced two new instructional videos designed to demonstrate the fea-

tures and use of DeluxePaint IV. The DeluxePaint IV Video Guide takes the viewer on a guided tour. The video covers the new menu structure, metamorphosis, translucency, HAM color mode, and more. A variety of "quick tips," useful to any DeluxePaint artist, are also included.

Advanced Techniques with DeluxePaint IV demonstrates various tips and tricks for combining the program's different tools to achieve spectacular effects with professional results. The viewer is shown how to create effects such as 3-D text, drop shadows, textures, color cycle animation, professional titling, and much more. Amiga artists can create high quality graphic and animations quickly and easily after watching the video. *Suggested retail price: \$29.95 each, Saddleback Graphics, 12812 Garden Grove Blvd. Unit P, Garden Grove, CA 92643, (714) 741-7093, Inquiry #251*

• Other Neat Stuff •

Meggido Enterprises

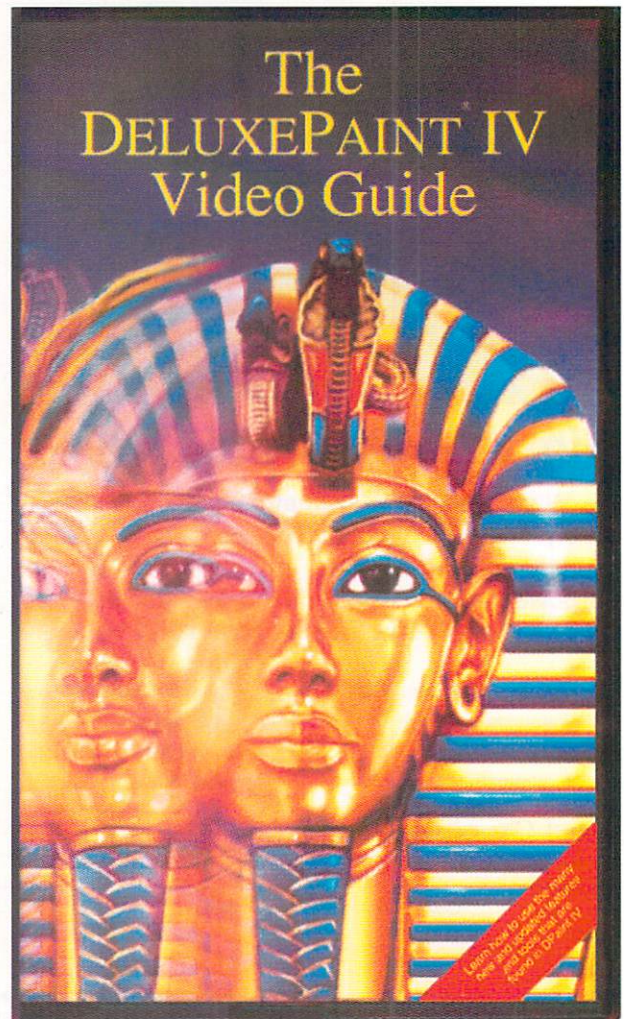
Meggido Enterprises' phone number in the September New Products (Recipe-Fax V2) was incorrect. The correct number is (714) 683-5666.

Eraware moves

Eraware, makers of *CLI-Fonts*, have announced a new mailing address. The new address is: 2022 Onyx Street, Eugene, OR 97403, (503) 344-7684

International 16-bit Computer Show

The fifth International 16-bit Computer Show, organized by Westminster Exhibitions, will take place at the Wembley Exhibition Center on February 14-16, 1992. The show is aimed at potential and current users of Atari ST, IBM, and Commodore Amiga users who want to gain a clear idea of which products are available, what they are capable of, and how they perform. Exhibitors come from Holland, Germany, France, Canada, and The United States. For further information, please contact: Julie Collins, Westminster Exhibitions Ltd., Surrey House, 34 Eden Street, Kingston, Surrey KT1 1ER, (081) 549-3444



JAM! becomes SuperJAM!

Blue Ribbon Soundworks has changed the name of JAM!, their latest music program for the Amiga. See December's New Products for a complete description of JAM! To avoid confusion with other music programs available to personal computer users, the new name of the product will be called SuperJAM! *Blue Ribbon Soundworks, 1293 Briardale NE, Atlanta, GA 30306, (404) 377-1514*

•AC•

New Products & Other Neat Stuff is edited and compiled by Timothy Duarte.

How to get your products listed in New Products and Other Neat Stuff

Send a descriptive press release and two copies of the software or hardware. Please include product name, price, company name, full address, and telephone number. Our mailing address is: PiM Publications, Attn: New Products Editor, P.O. Box 2140, Fall River, MA 02722-2140. For UPS and Federal Express, our address is: 1 Currant Rd., Fall River, MA 02722.

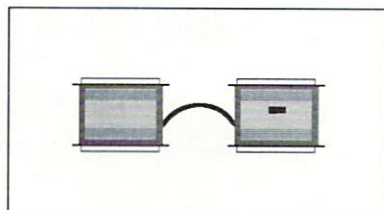
Utilities Unlimited of Oregon, Inc.

PO BOX 532
North Plains, Oregon 97124
(503) 647-5611
(503) 648-8992 FAX
(503) 647-9022 Technical Support

CANADIAN ORDERS:

PO BOX 311
Stratford, Ontario, Canada N5A 6T3
(519) 272-1528

SYBIL



\$99⁹⁵

SYBIL is a multi-talented hardware/software package. Just look at a few of SYBIL's amazing abilities:

- AMAX II Patch** - Turns one or more of your Amiga drives into a MAC compatible drive while using AMAX! Allows Reading and Writing REAL MAC format with normal Amiga drives! This patch also disables drive clicking, allows the use of AE High Density drives, allows control panel configuration to be saved, eliminates the need for the cartridge to be installed (saving power), and more!
- Disk Compress** - Compress entire disks into AmigaDOS files! These files can be transferred to hard drives, tape backup units, modems, or any other means of data transfer. When needed, the file can be de-compressed back on to a floppy so the program can be used. Works with ALL disk formats, copy protected or not!
- Extra Storage** - Tired of having only 880K of storage? With MegaBench™ you can end your storage problems! Using SYBIL, you can format a standard DS/DD floppy to 1.12 megs! SYBIL is required to WRITE data to these special formatted disk, however, ANY Amiga can READ them! Imagine having a 1+ meg WorkBench!
- Disk Copier** - A special version of the Super-Card Ami II software was created to use SYBIL's superior copying abilities. Eliminates ALL drive speed conflicts!

Super-Card Ami II

This hardware/software package allows you to make backups of your copy-protected software the same day you buy them! NO WAITING FOR PARAMETERS! The software is straight forward and easy to use. Amiga, IBM, Mac, and Atari ST disks can easily be copied regardless of the copy-protection scheme! The user interface is a delight for novice users to operate, and has all of the features that advanced users demand.

Super-Card Ami II came about after two years of expensive research and development. Now, due to the overwhelming success of this product we are able to offer this amazing backup system at a lower price! Now you can own a HARDWARE copier for less than most software copiers!

\$49⁹⁵

We now have PARAMETERS! Now you can remove documentation style (code wheels, manuals, etc.) and disk based copy-protection. As a bonus, you can install many programs on your hard drive! This truly is the last backup system you'll ever need!

Super-Card Ami II Utility Package

This unique software package offers the latest in high tech disk analysis and manipulation. Features include:

- MFM Editor/Analyzer** - Allows user to view, analyze, and alter the actual data stored on a disk's surface!
- Drive Alignment** - Checks your disk drive for proper track to track alignment.
- Copier Construction Set** - Allows you to create your own custom Copier Files for use with Super-Card Ami II or SYBIL.
- Drive Speed Check** - Checks rotational drive speed.

\$29⁹⁵

Ami Super-Tracker

Have you ever wondered WHERE problems tracks are located? Now, with Super-Tracker you can tell! This attractive digital track display simply plugs into the last disk drive or directly into the Amiga's drive port.

The physical head location (track), and the current head (top or bottom) is displayed.

No serious Amiga archiver should be without one!

\$59⁹⁵

KickStart Board

Kickstart 2.0 is finally a reality! What is also a reality is that a lot of commercial software will not run under OS2.0! This is not the fault of Commodore, the problem lies with the programmer. In any event, you are stuck with software incompatibility. NOT ANYMORE! The KickStart Board allows you to have up to three different KickStart ROM's in your machine at the same time! A simple 3-position switch selects the ROM you wish to use.

Installation is easy! Just remove your existing ROM from your Amiga and place it on top of the KickStart Board. Now, plug the KickStart Board into where your ROM was originally...that's it! Works with ALL Amigas that have KickStart on ROM.

\$39⁹⁵

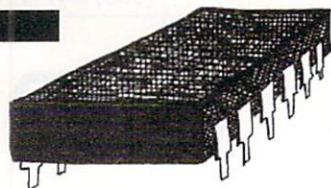
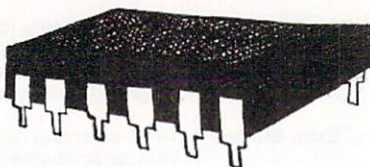
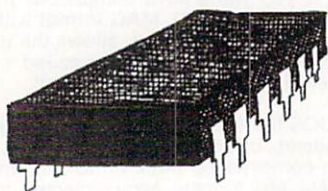
ORDERING INFORMATION: We accept VISA and MASTERCARD, C.O.D., Money Orders, and Personal Checks. Add \$5.00 per order for shipping & handling. Add an additional \$4.00 per order for C.O.D. Add an additional \$3.00 for ALL foreign orders. Add an additional \$5.00 for UPS Blue (2nd Day). ALL prices in U.S. funds!

Call our support BBS: (503) 256-1217

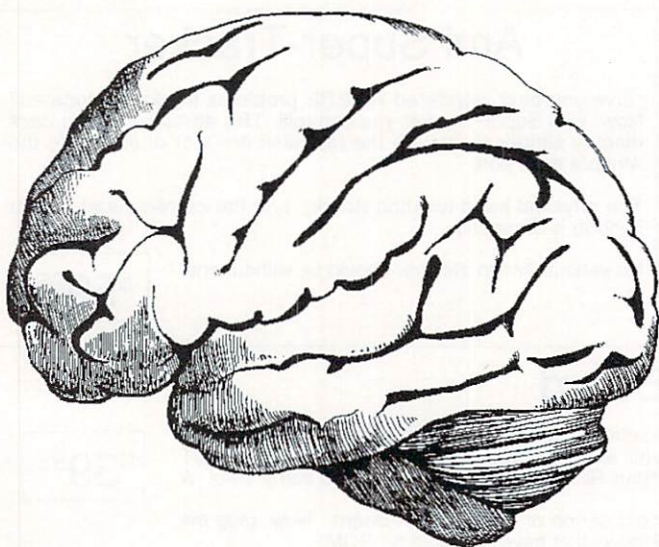
Circle 128 on Reader Service card

Memory Expansion for your 500

By Sam Ammons



If you are an Amiga 500 owner like me, you will eventually come to the realization that you need more memory than the 512K or 1MB that it comes with. Some of you are probably tired of running out of chip ram with your graphics-oriented programs, and some of you are tired of that "Insert WB1.3" message that is always popping up. I do not have an external drive on my 500, and when it comes to choosing between memory and a disk drive, I will choose the memory option first.



The most obvious reason for more memory is to run larger or more complex programs. Although this is also possible with an additional disk drive, you are sacrificing speed of operation for just a few dollars savings. A gain in speed is advantageous in a number of ways. Since you can put a whole program *and* its data files in RAM, file saving and retrieving will be much quicker. For more speed, You can make commands resident in RAM, like the commands CD, DIR, COPY, and DELETE. Not only will doing that get away from the time lag in getting the command from the workbench disk, but you don't have to buy another floppy disk drive. You can put those dollars into a hard disk system. People with a hard disk seldom need a second floppy. Also, the lack of a second floppy keeps your power usage lower so you may not need a bigger power supply so soon.

You have a number of options in deciding which RAM expansion product to buy. If you know you will be getting a hard drive soon, it may be best to get a hard disk system that has RAM expansion built in. That will save you money. If you are going to go with an IDE type drive, there currently are no IDE controllers that have built-in memory expansion capa-

bilities. You have two options left. These are internal and external. My 500 already has a 512K expansion board in it that would have to be removed if I wanted to use an internal memory board like the BASEBOARD. Also, the BASEBOARD costs about the same as an external product called the 500RX by SUPRA Corp. The BASEBOARD holds only 4MB, requires disassembly of the 500, and removal of the 512K RAM expansion. The 500RX comes with at least 1MB and is expandable to 8MB. This means I won't have to buy any daughterboards. Since I have an AMIGA 3000 also, I won't be needing a hard disk so I chose the SUPRAM 500RX.

With economy in mind, I purchased the 500RX with 1MB installed. This memory is arranged as eight "zips" of 256K by 4 bits. I can also use 1m x 4 zips but the price of these is too high right now. A zip-packaged memory chip has all its pins on one side, arranged like the teeth on a zipper, hence the name. Many people who sell memory do not know what a zip package is so make sure you don't get a "sim" instead. A sim is a little circuit board with eight or nine memory chips on it. They are commonplace in the MAC and MS-DOS market. The zips need to have an access time of 120 nanoseconds. You could use faster zips, but you would gain nothing at all. If you are confused by this nanosecond thing, don't be. In this case, it is a measurement of the time delay from when data is requested by the computer, till it is presented by the memory. The Amiga always waits a little more than 120

The zips will have a label on the board for which 'bank' they are in. In my 500RX I had zips in banks 1 and 2. In the 500RX that comes with the higher density zips, they come installed in bank 1. I carefully inserted the zips in banks 3 and 4, making sure there were no pins bent under, and that the notch indicating pin 1 was oriented the same as the pre-installed zips. After checking everything, I set the jumpers as indicated in the manual, and replaced the covers. To install the 500RX, you remove the plastic cover over the expansion connector on the left side of the 500 and press the 500RX on to the exposed card edge. You must make sure that the metal edge of the 500RX case goes outside of the Amiga 500 case and not in between the RF shielding and the motherboard. If this rule is not followed, you will most certainly *kill* your 500. Too bad that was not mentioned in the manual, as I have a friend who killed his 500 that way. Of course the power should be off and the whole assembly should be flush against the 500.

Once connected to the 500, the switch on the 500RX should initially be in the down position for testing. The switch serves to disable the memory from being added to the available memory in the 500, thus making sure no programs get loaded into it before testing is complete. When you run the included test, the program will put various patterns into the new memory and check that what is read is the same as written. The test can also find simple hardware errors like adjacent pins shorted on the board. The test looks the same as

You have a number of options in deciding which RAM expansion product to buy.

nanoseconds for this data. The AMIGA 3000 uses zips also, but these have to be 80 nanosecond zips. The faster the access time is, the more expensive the memory will be.

The important requirement to remember is to choose the zip configuration best suited to your needs. I found zips for my second MB at a good price, so I decided to go with 2MB in my 500RX for now. When I need more than 3MB total memory in my 500, I will replace my zips with ones of higher capacity. By that time the price will have gone down. You cannot mix the two types of zips in the 500RX, so you must choose wisely.

The 500RX came well packaged in a box with foam, documentation and a disk for testing. My configuration was with 1MB so I immediately got my tools and static strap and went to work. The 500RX comes in a metal case held together by four screws. There is also a small opening on one side covered by a metal plate held on by two screws that should also be removed. A good feature about the 500RX is the expansion pass-thru connector. This would be used for connecting a hard drive system. When you lift the cover you will notice a row of sockets, some of them containing zips.

the test provided with the SUPRAM 2000. If there is a problem with a particular memory location, a table in the clearly written manual will help you locate the bad zip. To determine whether the zip is bad or if the problem is the board or socket, just swap the bad zip with one of the good zips next to it and run the test over. If the test finds the same suspected zip, then the problem is most likely in that zip, or that it has a bent over, broken off, or dirty pin. If the test says the zip in the same location is bad, the most likely cause is either a bad or dirty socket, or there is a poor solder joint on the 500RX. In my case I had a bad zip. Since I always buy a spare, I wasn't too disappointed. Remember that one bad zip makes the whole bank unreliable.

When the test runs three or four times with no errors, you can be sure that life will be much easier as far as your 500 goes. The first thing that I did was to make a modification to my startup-sequence file. This was just adding more buffers to my floppy disk. I also made some changes to my StartupII file to make some commands stay resident in memory. You might try this too; just add these new lines after the first line in the StartupII file:


```
resident SYS:c/copy pure
resident SYS:c/delete pure
resident SYS:c/dir pure
resident SYS:c/newshell pure
resident SYS:c/endcli pure
resident SYS:c/path pure
resident SYS:c/prompt pure
resident SYS:c/rename pure
resident SYS:c/run pure
resident SYS:c/type pure
```

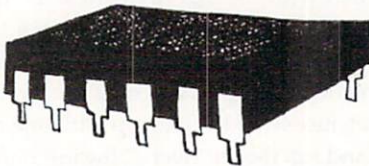
You should also remove three lines near the bottom that are intended to remove mount, assign, and makedir from the memory. If you don't want to remove those lines, you can put a semi-colon in front of them as this example will show.

```
;Resident Mount remove
;Resident Assign remove
;Resident MakeDir remove
```

Those two files are in the 'S' directory of your boot disk. After those changes are made, whenever one of those commands is needed, it is already in memory so you will not have to do the workbench shuffle before continuing. Another command to have near the top of the startup-sequence file, if not there already, is:

```
SYS:system/FastMemFirst
```

That command tells the Amiga to use this new memory before the graphics memory, thus making sure you have the most amount of graphics memory available for sounds, screens, and animations. You might want to make those changes on a backup copy of your boot disk. This is so in the event that the 500RX develops a problem or you need to disable it, you can easily go back to the way you previously used your 500.



After saving these changes, you should flip up the switch on the 500RX and reboot. If you still get frequent requesters to insert the workbench disk, you may click on CANCEL and you will find out what command the program was looking for. This technique tends to stop your program, but once you find out what command the program was looking for, you may be able to make that command resident also. If you can not make the command resident, you may try to copy the command to the RAM: device. If the RAM: device is listed in your PATH command, the program will find it. While we are all thinking about the RAM: device, you can copy whole programs and data files into it and really speed

things up. If you use the RAD: device, your files will even stay in memory through a reboot, possibly even a crash! If you use the new memory as a disk drive, but in memory, you will most likely have to learn the ASSIGN command. There are too many options concerning that command to cover here; you should look into your manual to become familiar it.

Something you should be aware of, once you have this additional memory, is that not all programs will need it. Some programs will not run with it enabled. This is so because the programmers did not do their Amiga homework. Each memory location has an address—just like a house. If you only specify the last five digits of the house number, new houses with a six-digit address may get mail for somebody else, or no mail at all. In your Amiga these "extra" digits of the address may have been used for data digits and you can imagine what would happen if this important information was sent to the wrong memory address because the computer used those digits as part of an address. The good news is that most of those programs are old now, and programmers have since made allowances for these other memory addresses.

As you can see, the addition of more memory to your Amiga can really help make it be more productive, less frustrating, and more fun. If you learn about the commands discussed here and implement that information, you will be better able to finish that big project faster, get that game to run smoother, or maybe even write that article about the Amiga.

•AC•

Products Mentioned:

SUPRAM 500RX
Price: \$399.00 (2MB)

SUPRAM 2000
Price: \$449.00 (2MB)

SUPRA Corp.
1133 Commercial Way
Albany, OR 97321
(800) 727-8722
Inquiry #202

BASEboard
Price: \$149.95
Expansion Systems
44862 Osgood Rd.
Freemont, CA 94539
(415) 656-2890
Inquiry #203

Please Write to:
Sam Ammons
c/o Amazing Computing
P.O. Box 869
Fall River, MA 02722-0869

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NUCLEUS ELECTRONICS'

Personal Single Frame Controller

24-bit Animating Solution

by Frank McMahon

WHAT A YEAR! Not once since the Amiga's release have there been so many professional video products released. Who would have thought only 12 months ago that 1991 would bring us 24-bit boards, internal TBCs, real-time NTSC video animations, media controlling software, CD drives, the Video Toaster and much more. What has been more notable than the variety of products is their affordability. Suddenly, professional video results are within the reach of the average Amiga user. Well, get ready, because it's happening again. *The Personal SFC* from Nucleus

Electronics is a hardware/software-based single-frame controller that replaces dedicated rack-mount units costing between \$2000 and \$5000 and *outperforms* these units while costing less than \$500. It includes built-in support for the Video Toaster, Toaster Paint, DCTV, Ham-E, and the Firecracker 24 board. The Personal SFC is one of the most impressive products of the year.

What is a frame controller? Typically, it is a hardware unit that is placed in between the Amiga and a frame-accurate deck. The controller gets a signal after the Amiga renders a frame. The controller then signals the tape deck to record that frame onto tape. Sounds easy but it's not. With so many varying decks and Amiga programs involving exact precision, it almost takes a computer to do it. In fact, that's what frame controllers are...computers. Why spend \$3000 for a computer controller when you already have an Amiga? That's a good question, and one answered by the Personal SFC. All commands and controls are entirely software-based with only a cable running from the serial port on the Amiga to the control port on the video deck. In essence, your Amiga is doing the controlling, eliminating the need for a dedicated piece of equipment. Since it is software-based, new deck drivers can be easily added through software updates, as can support for new 24-bit display devices and framebuffers as they become available.

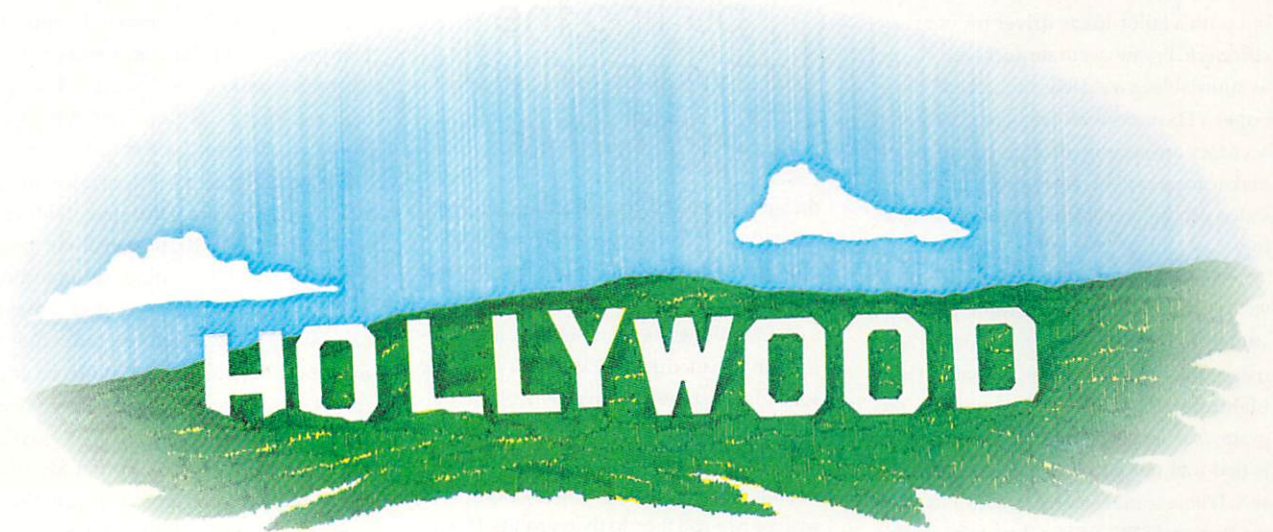


The Personal SFC main control panel.

Preproduction

The package comes with a 23-page manual, a 9-pin to 25-pin serial cable, and one diskette. Installation is as easy as hooking the cable from your Amiga to your deck and putting the included software on your hard drive. There are some requirements in order for the Personal SFC to work correctly. First you must have a frame-accurate video deck. The company currently supports the following decks: Panasonic: AG-7750 (SVHS), AU 60, AU 65, AU 640/650/660; Sony: BVU 800/820/850/870/950, VO9850, BVH 2000/2500/3000/3100, BVW 70/75, DVR 10/18, PVW 2800; and JVC: BRS 810/811 (SVHS). Deck drivers coming soon include: Ampex: VPR 3/6; JVC: BRS 822 (SVHS), CR850U; and Sony DVR28. Most of the above decks are 3/4 inch, Beta, 1 inch,

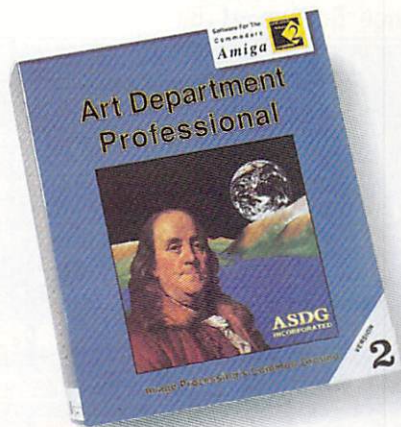
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Circle 102 on Reader Service card.

and Digital. In addition, the deck must be time-code capable, either VITC (vertical interval time code) or LTC (longitudinal time code). Time code is embedded into your video tape and allows accessing of specific frames. If your deck is frame accurate with time code and does not appear listed above, it should still work. In the meantime, setting variables in the software via the menus is possible, until Nucleus Electronics comes out with a tailor-made driver for your specific deck. Frame-accurate decks are still not as affordable as we'd like, though. However, Super VHS decks with time-code and frame accuracy are steadily dropping in price and make an excellent entry-level format for video production as well as Amiga animation.

For testing purposes I used a Sony SP 9850 3/4 inch deck at our cable television studio. I did the testing on an Amiga 2500, using the Video Toaster, Toaster Paint, Lightwave 3D, and the 3-D rendering program, *Imagine* from Impulse. Since the 9850 is tied into our editor, I had to remove the serial cable coming from the editor to attach the Personal SFC. To avoid cable swapping, use an inexpensive serial port switch box in an editing set-up. After booting up the software, you will see a configuration screen. The program automatically seeks through

Installation is as easy as hooking a cable from your Amiga to your deck and putting the software on your hard drive.

the serial cable and relays information about what deck is being used; the video deck must be set to the remote mode. If your deck is one of the ones supported, you don't have to set anything, as your settings are automatically loaded; just click on OK. There are several adjustments such as synchphase, balancing, and frame correction that can be adjusted to your liking. One warning: the default configuration file for the Sony 9850 sets the pre-roll time to five seconds. I never use fewer than seven during editing, and I've found that if it is set for five seconds during single frame recording, the deck will miss a frame on occasion; however, on seven

seconds, it's perfect. I recommend setting it to seven and resaving the configuration file for best results.

In Control

After the configuration screen, the main control screen appears with video deck controls such as play, record, pause, rewind, stop, fast forward, and a shuttle mode. Controlling the deck is as easy as clicking the on-screen buttons. All commands appear in text prompts on the status screen below. There are even keyboard commands for play, stop, rewind, and fast forward. A joystick in Port 2 can be used as a shuttle "stick" for scanning the tape forward or backward. The PNTS (points) button on the right side of the screen and the TAKE button allow manual frame-by-frame recording. By inputting a camera into your deck, one can use this feature for "claymation" or other live animations. There is even a time-lapse option for recording long frame-by-frame events such as sunsets, cloud formations, and flowers blooming. A preroll button for adjustment and an eject tape icon are also included. The ANIM button takes you to a separate animation sequence editor. Here is where the power of the program kicks in. Your entire sequence of frames to be sent to tape is listed, allowing several features to be

The Personal
SFC
Animation
Sequence
Editor.

VTR Animation Sequence Editor v1.0a

TimeCode	Last Directory And Image Name	Count	FileType
00:58:00:00	Toaster.0001	001	ToastRdr
00:58:00:01	Toaster.0002	001	ToastRdr
00:58:00:02	Toaster.0003	001	ToastRdr
00:58:00:03	Toaster.0004	001	ToastRdr
00:58:00:04	Toaster.0005	001	ToastRdr
00:58:00:05	Toaster.0006	001	ToastRdr
00:58:00:06	Toaster.0007	001	ToastRdr
00:58:00:07	Toaster.0008	001	ToastRdr
00:58:00:08	Toaster.0009	001	ToastRdr
00:58:00:09	Toaster.0010	001	ToastRdr
00:58:00:10	Toaster.0011	001	ToastRdr
00:58:00:11	Toaster.0012	001	ToastRdr
00:58:00:12	Toaster.0013	001	ToastRdr
00:58:00:13	Toaster.0014	001	ToastRdr
00:58:00:14	Toaster.0015	001	ToastRdr
00:58:00:15	Toaster.0016	001	ToastRdr
00:58:00:16	Toaster.0017	001	ToastRdr
00:58:00:17	Toaster.0018	001	ToastRdr
00:58:00:18	Toaster.0019	001	ToastRdr
00:58:00:19	Toaster.0020	001	ToastRdr
00:58:00:20	Toaster.0021	001	ToastRdr
00:58:00:21	Toaster.0022	001	ToastRdr

Select Operation to Perform on Frame(s)

Replace	Show	Delete
Loop Range	Copy Range	Paste Range
Insert Individ	Insert Seq	Cancel

Fr 30/ 2000
RF 30/ 1980

Clear Selected

Select Range

Stripe Tape

Load List

Save List

Print List

Clear List

Preview

Record

Display Type:
@ Toaster DV1

Exit To Main

altered. For example, you could set your first frame to 20 seconds and then each frame afterwards could be set to the normal 1/30 (frame) of a second. This would show the graphic still, and then the animation would start. You could cut and paste, and create looping animations. Did your deck miss a frame? No problem—simply resend the command for that particular frame. Animation too fast? Set the count to record two frames at a time for 15 frames per second rather than the default of recording for a one-frame duration. Not limited to just animation, the frames can be any amount of time, allowing for perfectly timed slideshows dumped directly to tape.

The program is smart in that if you change the time amount or time position for a certain frame, the following frames will

incredibly easy, stable as a rock, and totally automatic. The resulting 24-bit files to video resolution animations are stunning to look at and appear 100% professional. As I read on, I found it also renders with Toaster paint—*any* IFF 24-bit file! So I created an animation to hard drive using Imagine, saved the 24-bit files in a directory with frames numbered sequentially, and returned to the Personal SFC software. After answering a few prompts and starting up Toaster Paint, I found that the program took over. I leaned back in my chair, thinking of the possibilities as the program loaded each frame off the hard drive into Toaster Paint, rendered it to the Toaster buffers (DV1 & DV2), and single-frame recorded it to videotape exactly according to my animation sequence! This means as long as you have the

frame, allowing for much more frames on the particular storage device. The result is longer, but lower color resolution, animations.

Conclusions

If you have a single frame recorder with time code and own DCTV, the Firecracker 2424-bit board, HAM-E, or the Video Toaster, then this unit is a "must have." It especially shines when working with the Video Toaster. Lightwave 3D has perhaps the best interface of any Amiga 3-D program and makes the process of animating a piece of cake. The Personal SFC goes beyond just icing to include numerous editing commands thus allowing full control over each and every Lightwave frame.

Any bad points about this product? None. However, a bit of advice: Any single-frame control system is taxing on the video deck. Pausing, stopping, rolling, waiting though numerous rendering and frame amounts can take its toll eventually. And when a deck is wearing out to the point of needing some rebuilding, one of the first things to fail is single-frame accuracy ability. The best advice I can offer is to render all frames to a hard disk or optical disk storage device and *then* send them to tape. It's more flexible and quicker, and can add years to life of a deck.

Other than that, I can't recommend this package enough. If the Video Toaster was the marriage of Amiga and professional video, then the Personal SFC is one heck of a honeymoon. After the Video Toaster, I thought I had seen it all. Now, after reviewing the Personal SFC, I realize I have seen only the beginning. The best is yet to come.

•AC•

The resulting 24-bit files to video resolution animations are stunning.

adjust accordingly as far as matching up with the time code sequence. You can cut, paste, loop, repeat, insert, delete ranges and single frames just like using a word processor. The lists can be saved, loaded, and printed. The program will even lay down a black time-coded tape for you through a screen icon! Drop frame support is here—a method of color correcting by removing specific frames to comply with NTSC's 29.97 frames per second—as well as non-drop frame, standard 30 frames per second. The program even creates a small gray scale preview of what your animation will look like *before* you commit to tape.

Video Toaster Test

Although it works with many programs, the Personal SFC primarily is built to get the most from New Tek's Video Toaster. After setting a few prompts, one gets control over to Lightwave 3D, which renders your animations to tape. After numerous testing while multitasking the two programs—Personal SFC and the Toaster software must both be running—I have found the process

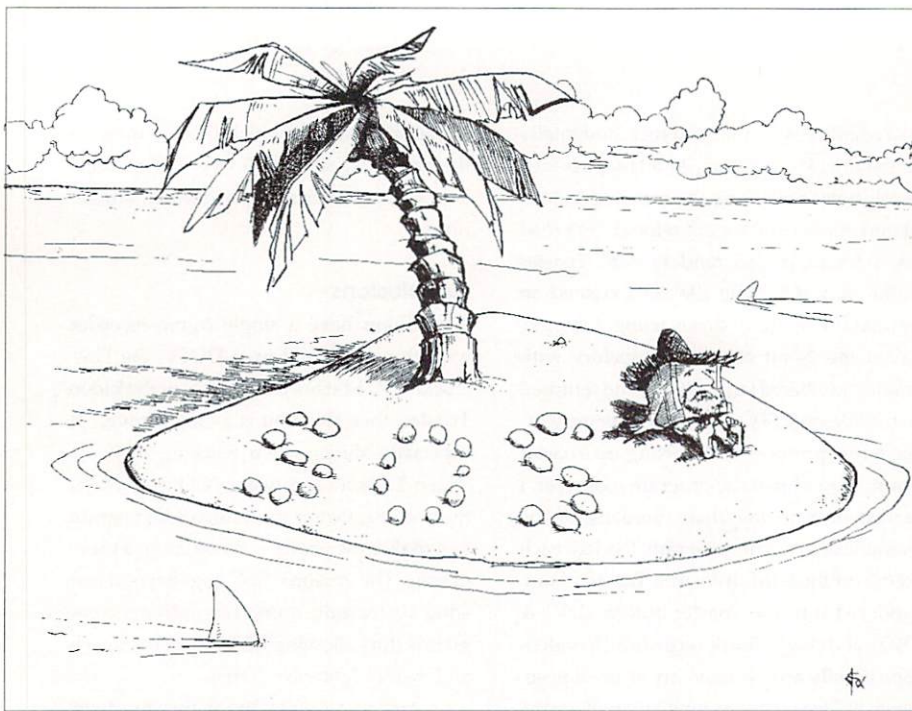
storage space you can use the Toaster buffers for creating 24-bit to video animations using *any* program that produces 24-bit files—Imagine, 3D Professional, Real 3D, Scenery Animator, Vista Pro, to name a few.

In fact you don't even have to use the Toaster buffers for 4096-color or fewer animations. I exited the Toaster software and enabled the built-in Toaster genlock and created some impressive single frame HAM animations with Imagine and some 16-color animations/slide presentations with DeluxePaint. You can even genlock an animation over a live single-frame event using a combination of Amiga graphics and camera feed.

Wait—it gets better. What if you don't have a Toaster? Well the Personal SFC software will do the same thing—load in a frame to the buffer and save to tape—with the Firecracker 24 board, HAM-E, DCTV, and Colorburst—all quickly and automatically. This is of particular interest to DCTV and HAM-E users. Since the hi-color frames are much smaller in file size, as opposed to a standard 1MB 24-bit frame or Toaster

Personal SFC
Price: \$425.00
Nucleus Electronics
10 Cross Ave.
P.O. Box 1025
Nobleton, Ontario
Canada L0G 1N0
(416) 859-5218
Inquiry #200

Please Write to:
Frank McMahon
c/o Amazing Computing
P.O. Box 869
Fall River, MA 02722-0869



HELP FOR THE HELP KEY

by Rick Manasa

When I was new to the Amiga, I'd often look longingly at the Help key, wishing it would provide some help for whatever problem I was facing at the time. Unfortunately, most programs don't put much help in the Help key, opting instead for quick cards, their own method for bringing up on-screen help, or even (gasp!) expecting you to look through the manual for whatever help you might need. To top it off, Commodore didn't make executing script files from the Help key an easy proposition for the non-programmer. Your intrepid reporter could not let this situation stand unchallenged. Time for some creative cobbling.

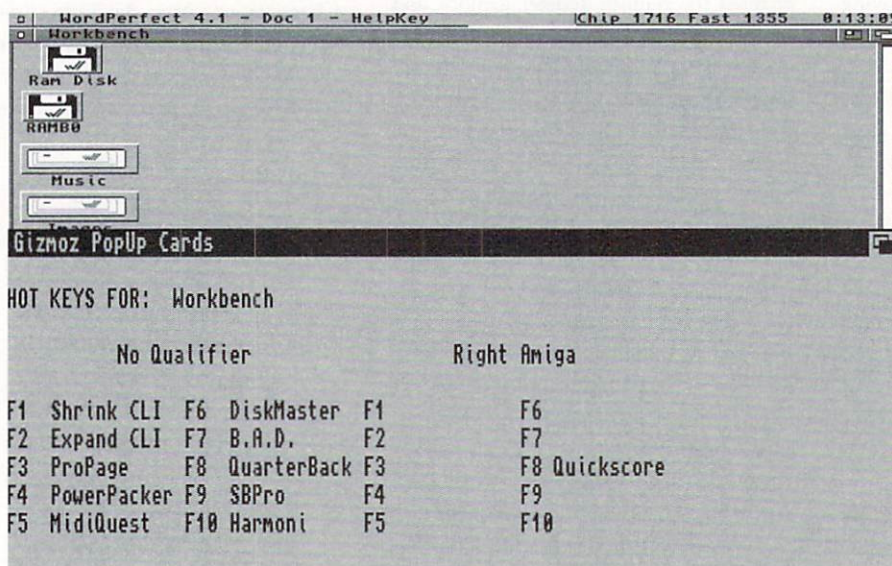
Help for the Help Key is not a difficult project and it's one that will pay dividends over and over again. There are four components required to make this version of the project work. First, you'll need a text editor or word processor that can create an ASCII file to make the script files. I'm most familiar with WordPerfect, but Ed in your C directory or MeMac in you 2.0 Tools directory would work just as well.

Second, you'll have to decide what information you'd like quick and regular access to, to put into this text file. I decided I'd like to have the Help key bring up a window that listed function key and hot key equivalents for whatever program I was using at the time.

Third, you'll need a way to assign this script file to the Help key. One of the few programs I've found that does this is MachIII, a public

domain program that provides a wide variety of useful utilities, including the ability to assign executable strings to any user-defined key or set of keys. MachIII can be found in the Fred Fish library and probably at many local user groups as well. Lastly, you'll need some way to display the file on the screen when you hit the Help key. I dug out an old copy of Gizmoz and copied the PopUp program into my Utilities drawer of my hard drive, to serve as the display program. I found this set of utilities in the \$5-\$10 cut-out bin at my local computer store. You can use any text viewing program you like, including More which resides in your Utilities directory. The advantage to PopUp is that it pops up a half-height

The pop-up style menu screen.



window in front of the current screen. There may be a way to redirect More to open on the current screen, but I haven't found it yet. Use whatever tools you are most comfortable with. Just be sure that you cover all four bases.

Once you've decided what information you want in the file, and what text editor or word processor to use, you're ready to go. Since this will be a vanilla ASCII file, fancy formatting is out. This includes bold, italics and underline. PopUp is so fussy it prints a character for every tab I try to use! I found that using the space bar and the return key were my best friends when formatting an ASCII file for this application. You'll have to experiment with margins and spacing and other formatting considerations to get the information laid out to your liking. Figure 1 shows my Workbench Help screen in its finished form in WordPerfect.

When I got the screen the way I wanted it, I saved it off as an ASCII file titled "WB.pop" in my Utilities drawer. PopUp looks for files with the ".pop" extension. I'm ready now to attach this file to the Help key with MachIII.

I'll be describing how to set up the Help Key from within MachIII. However, because MachIII is so comprehensive, a detailed description of all aspects of setting up and using MachIII is beyond the scope of this article. As a result, the descriptions will not be as detailed as a hands-on tutorial would be. If you are familiar with MachIII, this will not be a problem. Regardless, the concepts should translate fairly easily to whatever program you decide to use.

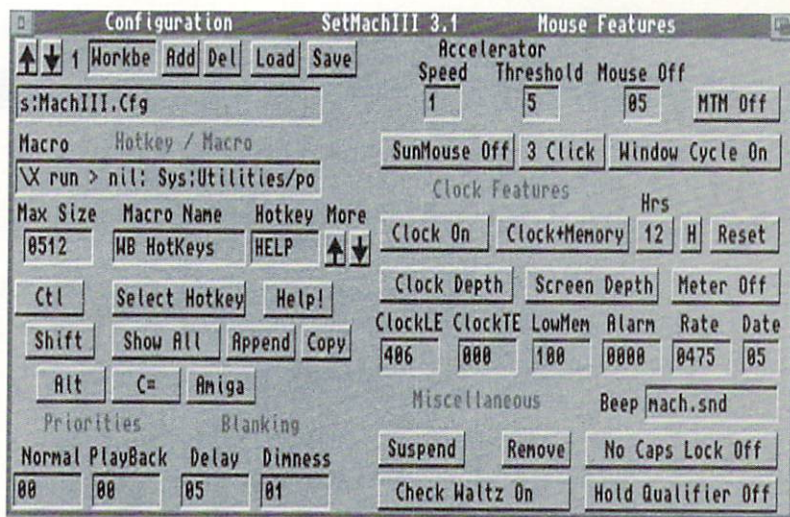
What I call MachIII is really two related programs. MachIII is the utility that runs the hotkeys, macros, etc., and SetMachIII is its companion program that you use to define the hotkeys, macros, etc. You'll actually be using SetMachIII to configure the Help key. This is a relatively simple procedure. Start by running MachIII from a CLI or your startup sequence. Then call up the SetMachIII program. You can do this by hitting Ctrl-Left Amiga-Esc, by typing "SetMachIII" into a CLI, or by clicking on the MachIII icon bar on your Workbench screen with your right mouse button. You'll be presented with the following screen.

A little more than half way down the left half of the screen is a button labeled "Select Hotkey." When you click on this button, a flashing requester appears asking you to "Press A Hotkey Combination." Hit the Help key. The string labeled "Hotkey" will have the word HELP in it. You're now ready to enter the command that will execute and display your script file.

Click once in the "Macro" string gadget. MachIII has a particular format for commands that is fairly straightforward. All executable commands start with the forward slash (/) and a capital X. Enter the rest of the command as though you were executing a command into a CLI. Let's assume you've stored your display program and text file in the Utilities drawer of the SYS: partition of your hard drive. If you labeled your file WB.pop and you were using PopUp as the display program, you would enter the following line in the Macro string of MachIII:

```
\X run > nil: Sys:Utilities/PopUp
Sys:Utilities/WB.pop
```

Click on the Save button to write this to MachIII's default configuration file. That's it! Each time you hit the Help key on the Workbench, MachIII will call PopUp and display the WB.pop file on the lower half of the Workbench screen.



Mach III set-up screen.

MachIII will let you set up as many different Help keys and screens as you care to define. You could set up a Help key for each program on your hard disk. You could add MachIII and a Help key hotkey to all your boot disks as well.

It's unfortunate that Commodore didn't provide a standard way to use the Help key for this type of application. While there are many programs that will let you define the function keys, the only program I've found besides MachIII that will let you define the Help key is HotKey, another part of the Gizmoz set of utilities. The disadvantage to using HotKey and other programs like it is that you must have a CLI open and active. HotKey merely types a text string into a CLI for execution. MachIII, on the other hand, performs its magic internally and does not require you to open a CLI before hitting the Help key. This saves a step, making it more immediate and useful for this type of application.

Keep in mind that these files can contain any information you want, so don't limit yourself as to content. You may want to call up a set of keystrokes you find yourself repeating in a particular program. I have one PopUp that tells me which buttons to use in Quarterback to do my once-a-month full backup and which ones to use to do my in-between incremental backups. You may want to put reminders for setting up your printer for different modes, or how to save a Postscript file for output to a service bureau. You could even dedicate the Help key to viewing particular IFF files or playing back a sound file. Just substitute a picture display or soundplayer program for the text display program and your picture or sound files for text files. All kinds of displays are fair game for the Help Key Solution.

The Help Key Solution has freed up my short-term memory and uncluttered my work space. No more quick reference cards and scraps of paper scattered about. I now reserve my curses for less easily solved problems (World Peace, the National Debt, and How to Keep the Dog from Chewing the Throw Rugs) and spend my computing time at the computer, not thumbing through my manuals.

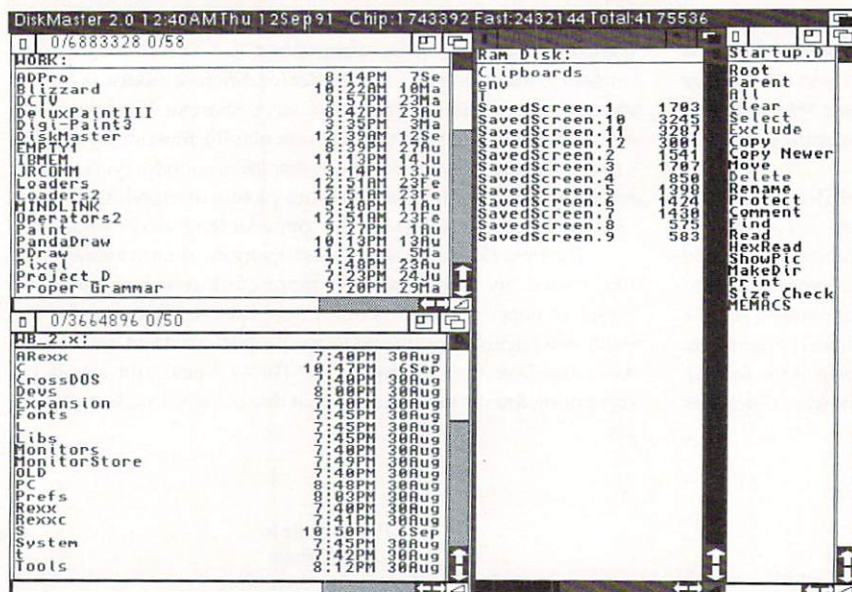
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PROGRESSIVE PERIPHERALS' DISKMASTER II

by Rich Mataka

THERE ARE MANY NEW PROGRAMS that are released with a great deal of fanfare and media blitz. Then there are updates that are released with much media hype saying "the best ever." Then there was the release of *Diskmaster II*. No advertising, no media blitz; in fact, I heard nothing at all about this program until I saw it on shelves in my local Amiga computer store. Is it better than previous versions of DiskMaster? Is it worth the purchase price? Well, let's put it this way, for an upgraded piece of software, Diskmaster II is without a doubt one of the best, most valuable programs that I have seen sneak in unannounced in quite some time. While you may not expect upgrades to always be significantly better, Diskmaster II takes the program to a new dimension, beyond its original known capabilities.



DiskMaster allows you to custom configure several windows on-screen at once to better monitor your work.

What is DiskMaster II? The back of the program box describes it as, "The Ultimate File Management Utility for all Amiga Computers," and I have to concur with that assessment. To date, I have not been able to think of a single function that I haven't been able to do with DiskMaster II.

The Manual

The manual included with DiskMaster II is 95 pages and has an excellent table of contents and index. The main information is contained in five chapters of well written information. The chapters are Introduction, The Default DiskMaster, The Custom DiskMaster, DiskMaster Requester and Screens, and DiskMaster/ARexx Commands.

Those who have used previous versions of DiskMaster will find the first two chapters to be a review. For those new to DiskMaster, I recommend that you read the information carefully as it will come in handy in later chapters. Chapter 3, "The Custom DiskMaster," is where you begin to really appreciate the power of this new program. I suggest that you follow the tutorials closely, as I will illustrate them in this review. The fourth chapter deals with the different screens and requesters that you will encounter when using the program. The final chapter details the ARexx commands that DiskMaster II supports. The inclusion of the ARexx support allows you to create some very complex command scripts easily.

Getting Started

Those of you who have used previous versions of DiskMaster will see a familiar screen when you start the program. The default screen that DiskMaster begins with is exactly the same as the earlier versions. However, don't let this fool you. The default screen consists of three different windows. You will notice that there is a window on the left which shows you all the volumes that are currently mounted on your system. The window on the right duplicates this information. In the middle of the two windows is a third window that contains all of your initial command functions. While at first glance this appears to be the same as earlier versions, a little closer inspection will reveal a few new commands. Also, earlier versions

did not have separate windows for each directory or the commands.

Commands

Some of the new commands that you will immediately notice in the command window is the Root, Parent, Exclude, Copy Newer, Hex Read, and Size Check. Root and Parent are methods to get around in Amiga-DOS from one directory area to another. Root can also bring up all the volumes that are mounted on your system, if you happen to be at the Root directory. The Exclude command allows you to deselect multiple files that would be based on a pattern of their names. For example, if you had selected all files on a drive, you could then use the Exclude command to deselect all files that begin with the letter "A."

Copy Newer is slightly different from the standard copy command. This command performs a function that compares the dates of the source file and looks for a similar file on the destination drive. If there is a similar file, a check of the dates occurs and if the date on the source file is newer, it copies the file to the destination. However, if the date is earlier, then no copy is performed.

The Hex Read command will read a file into an editor that will give you the hexadecimal value of the information in the file. This type of function is useful to programmers who are looking for hex information within files.

Finally, there is the Size Check command. This command is one of those invaluable commands that once you see it, you recognize it as a feature you've always needed. Clicking on this command will calculate the disk space needed to copy all the selected files and directories from the source disk chosen to the destination disk. Once it has completed calculating the information, it then tells you whether or not you have enough space on the destination disk and how much room you will have left.

There is also something new known as the AutoCommands. This is a new intelligent feature of DiskMaster II that enables it to evaluate a file and perform a predefined command on that file. For example, double clicking the left mouse button on an IFF ILBM (picture) file would automatically execute the command program ShowPic. The

```
MicroEMACS V2.1
AddCmd Exclude. 30. DeSelect
AddCmd Copy. 20. ReqPattern:Copy %s %d
AddCmd Copy Newer. 20. Copy %s %d NEWER
AddCmd Move. 20. ReqPattern:Move %s %d
AddCmd Delete. 30. ReqPattern:Confirm "All selected files will be lost.";Delete %s
AddCmd Rename. 20. Recurse OFF:Rename %s
AddCmd Protect. 20. Recurse OFF:Protect %s
AddCmd Comment. 20. Recurse OFF:Comment %s
AddCmd Find. 20. ReqPattern "Please enter search pattern";Find %s
AddCmd Read. 20. Read %s
AddCmd HexRead. 20. Read %s HEX
AddCmd ShowPic. 20. ShowPic %s
AddCmd MakeDir. 20. MakeDir
AddCmd Print. 20. Single:Print %s
AddCmd Size Check. 20. UnMark OFF:Check %s
AddCmd MEMACS. 10. ScrBack:External SYS:TOOLS/EMACS %s;ScrFront
OpenWindow 370 11 270 189

OpenWindow 0 11 272 189 WORK:DiskMaster

AddAutoCmd FORM????ILBM.ShowPic %s
AddAutoCmd FORM????ACBM.ShowPic %s
AddAutoCmd FORM????BSVX.ShowPic %s
--* MicroEMACS -- startup.dm -- File: WORK:DiskMaster/startup.dm -----
```

Left: Make your new commands a permanent part of the STARTUP.DM script by performing a "Save Config" from the Project Menu. Bottom: Use the Add Menu function to add and custom configure menus to your windows.

same is true for the archive type files which end with the extensions ARC, ZOO, or LZH. If the file you select ends in one of those extensions, DiskMaster II will automatically decompress the file. Finally, if you look closely at each window, you will see a small "S" or "D" in each directory window. This is how you can tell which window is the Source (or, as I like to think of it, Selected) Directory and which window is the Destination directory. The reason for this small cosmetic but important change will be made clear as you learn more about DiskMaster's features.

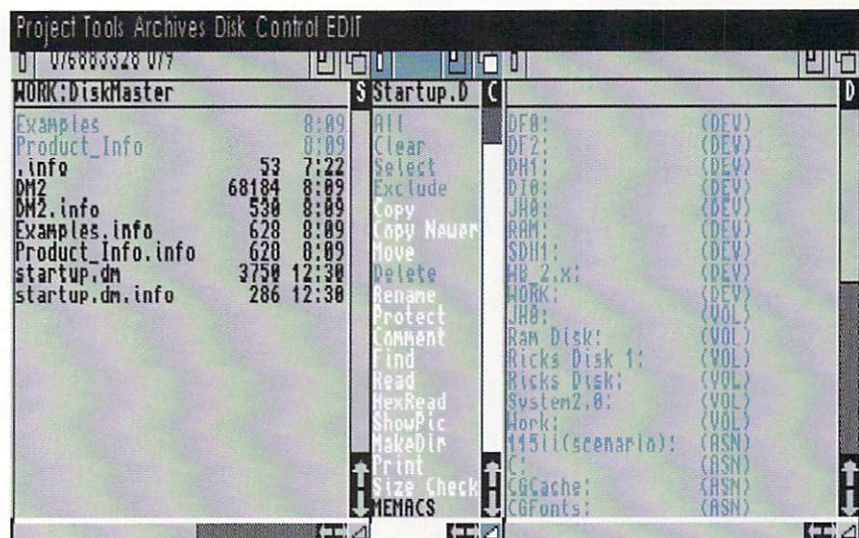
Menus

The next noticeable change is in the Menus. The five default menus that are provided with the program are known as Project, Tools, Archive, Disk and Control. To access the pull-down Menus, you need to hold

down the right mouse key while moving the pointer to the appropriate word on the screen.

Project Menu

When glancing at the Project Menu, you first will notice all types of new options that are available. The options you will see here are Display Format, Add Command, Add Menu Item, Palette, Printer Setup, Change Command, Save Config, Save Command Window, About, and Quit. The six Custom DiskMaster functions are Display Format, Add Command, Add Menu, Change Command, Save Config, and Save Command Window, which will be discussed later. However, we will take only a quick look at the other Menu items now as they are almost self explanatory.

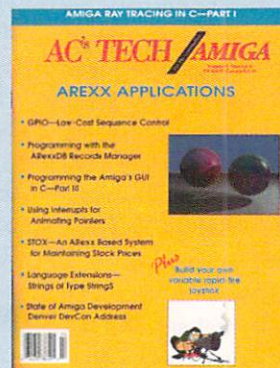


3 GREAT RESOLUTIONS:

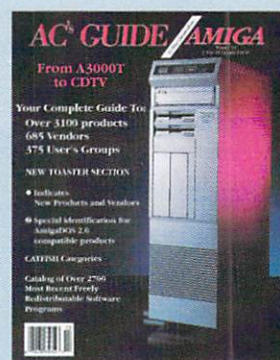
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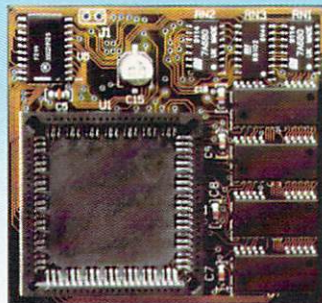
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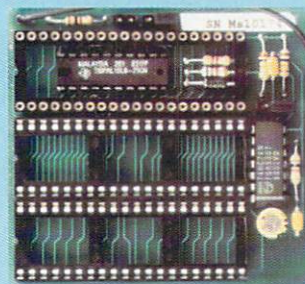
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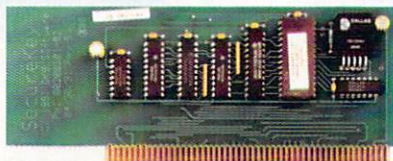
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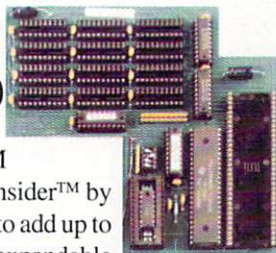
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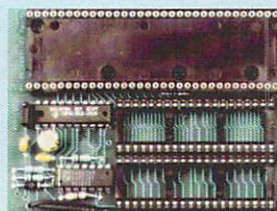
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The Palette command functions as expected. This function enables you to change the colors of the screen to your preference. A palette of only four colors is supplied with the default configuration. However, a way to modify this limitation will be discussed in the Advanced Commands area.

The Printer Setup area replaces the Preferences setting program that you receive with AmigaDOS. This function duplicates the Preferences settings by allowing you to access them within DiskMaster. If you should change printers while in DiskMaster, you have the capabilities of modifying your settings.

The About function will display the DiskMaster II credits. That is the only function of this command.

The Quit command will bring up a requester window, asking if you are sure you wish to quit the program. Selecting Yes with the mouse and clicking the left button will close all the open windows used by DiskMaster. Selecting No in the same manner will return you to the program.

Tools Menu

The Tools Menu is entirely new. Each of these commands performs a specific function. The commands are divided into standard DiskMaster commands or Custom commands. The standard DiskMaster II commands for tools are Run Selected, New Window, and New Command Window. The three Custom Commands are Change Font,

Diskmaster II takes the program to a new dimension, beyond its original capabilities.

New Command Window and Run DM (short for DiskMaster) Script. The Custom Commands will be discussed later.

Run Selected is a powerful new command that performs the function it specifies. It Runs the selected program or programs that you have selected in the Source window. It executes these programs sequentially; for example, if you have selected two programs and then select the Run Selected command, it will run the first program and when that is finished it will run the second program. Selecting the New Window tool command will open a new file display window. This new window can be just like any of the other directory windows you see on your screen. The only limit to the number of windows that you can open on your screen is the size of your screen and the ability to read the information.

Finally, there is the Swap S<->D command. This will swap the directory paths

between the last two directory windows that were selected. If you were to have a number of windows open, this command swaps the source and destination directories.

Archive Menu

The Archive menu performs the commands to Add, List, or Extract archive files. The default archive formats supported are LHARC, ARC, and ZOO. However, the archive programs themselves are not included with DiskMaster. These programs are public domain (PD) programs and must be acquired from other sources. These programs are available on many BBSs, from user groups, or from the Fred Fish collection shown in the back of *Amazing Computing*. These programs should be placed in your "C:" directory as part of your normal operating system, especially if you use PD software.

Disk Menu

The Disk Menu is provided as a means to format or copy disks from within DiskMaster. The earlier versions of DiskMaster did not multitask properly when the format command was chosen. Once you started a format you had to wait until it was completed before executing another command. However, DiskMaster II does multitask, but not within itself. The format must be completed or aborted before any other function takes place. Additionally, you could perform the diskcopy command or copy floppies from one drive to another or to itself.

Control Menu

The final menu is the Control Menu. The commands here function on the Source and Destination directory windows of DiskMaster. You now can Lock or Unlock the chosen directory windows as either Source or Destination windows. If you use these commands, you will no longer make the mistake of copying the wrong source drive. This really is an excellent feature that I guess will be used often.

Custom Commands

We are now moving into the innovative power of this highly flexible software package. In this area you can customize DiskMaster II to your heart's content. The

Use the
MicroEMACS
editor to
reconfigure
and
customize
your displays.

```
MicroEMACS V2.1
AddMenu Control, Unlock, Unlock
AddMenu Control, Unlock all, Unlock All
AddMenu Control, Toggle Expand, Expand

AddMenu EDIT, MEMACS, M, ScrBack:External SYS:TOOLS/MEMACS %s,ScrFront

Button "Parent"
SetFormat "NS T DMY A C"
BarFormat "DiskMaster 2.0 %T %W %D%MY Chip:%C Fast:%F Total:%P"
TitleFormat "%B/%F %I/%C"

OpenScreen 3 Lace
Color AAA DDD FFF 679
Font topaz/9

OpenWindow 269 11 102 189 CMD

AddCmd Root, 10, Root
AddCmd Parent, 10, Parent
AddCmd All, 30, Select *
AddCmd Clear, 30, Deselect *
AddCmd Select, 30, Select
-* MicroEMACS -- startup.dm -- File: WORK:DiskMaster/startup.dm -----
```


examples I provide only scratch the surface of what you can do with DiskMaster. There is virtually no function or command that I can think of that you cannot create with this program. Now let's begin looking at the different Menu items that are the real heart and power of the new DiskMaster II.

To start, there is a file created by DiskMaster called "STARTUP.DM" that contains the default internal script for the DiskMaster Menus and Commands. This file also contains the default window information on how you have to set up your screen. This file must be either in the "S:" directory or the directory from which DiskMaster is run. This file will also contain the customized commands that you will create and use with DiskMaster II. This file is created the first time that you perform the

to select and Add Command function that can be found under the Project Menu. When you have selected this function, you will see a requester placed in the center of your screen that contains the "Command Template". All you need to do is follow this Command Template and enter the new command. It's as simple as that! To have EMacs placed in the command window, I needed to type the following:

```
EMacs,10,ScrBack;External
SYS:Tools/EMacs %s;ScrFront
```

The format for adding a new command is:

Enter the Command Name.

I have not been able to think of a single function that I haven't been able to do with DiskMaster II.

"Save Config" that is in the Project menu. From that time on, each time you add a Command or Menu you will need to select "Save Config" so that your new script is saved in the file "STARTUP.DM".

Initially, when you first start DiskMaster you will see a credits box in the middle of the screen. The reason is that no "STARTUP.DM" file was found in either the DiskMaster or "S:" directories. However, once this file has been created you will no longer see the credits box.

Add Command

The first thing that we will do is to Add a command to our command window. Everyone has a favorite text editor that he enjoys using. There are two provided with AmigaDOS and they are ED and EMacs. My preference is to use EMacs for editing text documents; therefore, I will illustrate how a command is added using this editor as the example.

First you will need to hold down the right mouse button so that you can see the menus at the top of the screen. You will need

The next two numbers specify the color that will be used for the Text and Background of the command.

Screen Back pushes the DiskMaster Screen to the back before the EMacs command is executed.

External specifies that the following command is external to the DiskMaster program. The %s is the specifier that allows the selected file to be opened by the EMacs editor.

The Screen Front tells DiskMaster that once EMacs has been exited, the DiskMaster screen is to be popped to the front and made visible.

The job that this function performs is to create a small script addition to DiskMaster. After being sure that the command functions properly, you should perform a "Save Config" from the Project Menu. This way the new command will become a permanent part of the STARTUP.DM script.

Now, anytime you want to edit a text file, you need only to select the file and then select the EMacs command. Then the DiskMaster screen will be pushed to the

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back, EMacs will run, and the selected file will be opened for editing. When you have completed your changes, exit EMacs in the normal manner, and the DiskMaster screen will pop up to the front. This simple command entry performs all of those functions flawlessly.

Add Menu

Adding a menu item is really as simple as adding a command. Under the Project Menu you will find the Add Menu function. You select this function the same way you selected the Add Command. This will bring up a requester for the Add Menu Command, which also contains a Command Template. Using EMacs as an example of adding a new Menu, we would type in the following information in the Add Menu requester:

```
Edit,EMacs,E,ScrBack;External  
SYS:Tools/EMacs %s;ScrFront
```

Under the EDIT Menu there is a command called EMACS. This now becomes your EDIT Menu. To this menu, you could add any other programs that you can think of that could be used with text. Examples of this would be a separate Spell Checker program or text formatter or just different types of editors.

The command format for the Add Menu function is just as simple as the Add Command. The Add Menu format is:

First you must enter the MENU NAME. If the Menu Name already exists, the command will be added to the end of the Menu.

Second is the TITLE of the item as you wish to see it in the drop-down Menu area.

Third is the Hot Key command that will execute the Menu item. For example, I have assigned the right Amiga "E" key combination to the EMacs editor.

The remainder of the Add Menu format is the same as for the Add Command format.

Again, an addition to the STARTUP.DM script is made once you perform the Save Config command. The commands that you've added to the Add Menu requester are automatically transferred to the STARTUP.DM file.

Run Select is a powerful new command that runs programs you select from the Source window.

Display Customization

Wait, we are not finished yet! There are also options for changing your display. For this job we need to use the editor command that we just created. First, we access the disk and directory in which DiskMaster resides. Next we select the STARTUP.DM file. Now we have three different methods for accessing EMacs. First we could click the left mouse button on the EMacs name that is in the command window. Or we could press the right mouse button and select EMacs under the Edit Menu. Or we could press the right Amiga key and "E" simultaneously to access the EMacs program. Whichever way we choose, EMacs will be running and the file that we will be editing is STARTUP.DM.

Next we are looking for is a command in the file that says "OpenScreen." We are going to change this to read "OpenScreen 3 Lace". Once we have made this change, we save the file, and then we need to Quit DiskMaster. Starting up DiskMaster again, you will now see that we have an interlaced screen. If we then choose the Palette function under the Project Menu, we will see that we now have an eight color screens. Additionally, we can choose our own display colors. Finally, let's add an additional Command Window and rearrange the windows on the screen. To accomplish this, we need to select the "New Window" under the Tools Menu, and then just shrink or enlarge the windows by grabbing the lower right hand corner of each window on the screen. Once you have all the windows placed to your satisfaction, save the configuration again. From that point on your DiskMaster will start with this screen and be customized just the way you like it.

Don't worry if you make a mistake when entering a command, because you can always use the Change Command function under Projects to edit your commands. Or if you are the adventurous type, you can perform your editing directly into the STARTUP.DM file, which is the configuration file for DiskMaster II.

Summary

Having worked with DiskMaster II for about a month now has been a dream come true. I have played with the configuration on numerous occasions, making additions to the Menus and the commands. I have added all the different types of archive programs such as PKAZIP and DMS to the ARCHIVE menu. These are two other types of archive formats that I sometimes need to unpack. Changing DiskMaster really is simple and working with it to move, copy, or delete files is very simple.

Does DiskMaster II live up to its advertising as the "ultimate file management utility for all Amiga Computers"? Well, I think that the improvements that have been made since the last release have now put DiskMaster a step ahead of its competition. Without a doubt its configurability, expansion ability, and ARexx interface place it on the "must own" top-10 software list for any Amiga owner.

•AC•

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Ed Note: Just prior to the start of the layout period for this issue, Rich Mataka suffered a heart attack. Rich is doing well, and all of us at AC would like to wish him a speedy recovery.

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GETTING THE MOST FROM YOUR RAM DISK

by Keith Cameron

"Next paycheck, I'm going to get a second disk drive!" Have you heard that one before? For the past year, I have been saying that almost every time I boot my A500, and I still don't have that extra drive. Something else always seems to come up. So, like many other A500 owners, I'm still faithfully swapping disks in and out of drive DF0 what seems like every few minutes. Through experimentation, though, I have been able to devise a method that dramatically reduces the number of disk swaps I make. If you use AmigaDOS regularly, you may want to try this as well.

Basically, what we will do is make a directory in your RAM disk which contains those AmigaDOS commands you use most frequently. You will then be able to use these commands even when the DF0 drive is empty. The advantage is that you will not have to insert the Workbench disk in the DF0 drive every time you wish to issue a command, thereby freeing it up to use with other disks. Finally, we will create an execute file which will automatically do all of this for you each time you boot your Amiga.

From this point on, I will make three assumptions: 1) that you know the very basics of using the CLI; 2) that you are working with a copy of Workbench, for we will make some permanent changes to your disk; and 3) that the current directory throughout this project will be the root, or main, directory, unless otherwise specified.

Begin by booting your Amiga with a copy of your Workbench disk. Then, open your CLI and resize your window so that you will have the entire screen to work with. Once this is done, create a directory in the RAM disk to hold the commands we will be using. You can do this by typing:

```
MAKEDIR RAM:C <RETURN>
```

NOTE: As you no doubt have read numerous times before, AmigaDOS commands can be written in any combination of lower- or upper-case letters. However, punctuation and spacing must be copied exactly as presented in this article. Also, <RETURN> simply means to hit the return key one time.

I have chosen to name my new directory 'c' for obvious reasons. You can, of course, name the directory anything you wish. Now we need to move some commands from the 'c' directory of Workbench to our new directory. The commands

you decide to move are completely up to you. You should, however, move only those that you use regularly. Remember that anything stored in your RAM disk consumes memory, so pick your commands wisely. For my purposes, I would include CD, COPY, DELETE, DIR, INFO, LIST, MAKEDIR, and TYPE. To move the files, use the COPY command and type the following for each command:

```
COPY C/COMMANDNAME TO RAM:C <RETURN>
```

You would, of course, substitute the name of a 'c' directory command for COMMANDNAME in the above example. Once you have finished copying all the commands you want to include, check to make sure they actually exist in the RAM:C directory. You can do this by typing:

```
DIR RAM:C <RETURN>
```

You will then see a list of the commands. Make certain that all of them are in place. Just because you have the commands in the RAM disk does not mean that you can use them at this time. To prove this, remove the Workbench disk from drive DF0 and then type:

```
DIR RAM:C <RETURN>
```

You should see a requester appear instructing you to insert your Workbench disk in any drive. Once you insert the disk, the drive will spin and the DIR command from the Workbench disk will be used to execute the command. Why doesn't it use the DIR command in the RAM:C directory?

There is a file in the 's' directory of your Workbench disk, called "startup-sequence," which consists of various Amiga-

DOS commands. Upon booting, this file tells the computer what to do. In addition to receiving instructions from this startup-sequence, the computer is automatically programmed at the factory to look certain places for files. One of these places is the 'c' directory on your boot disk. What we have to do is find a way to instruct the computer to also search the 'c' directory on the RAM disk for commands. We can do this quite easily by using the PATH command. In your CLI, type:

```
PATH RAM:C ADD <RETURN>
```

This will tell AmigaDOS to add the RAM:C directory to the command path. Now, take the disk out of the drive and type:

```
DIR RAM:C <RETURN>
```

This time, you should get a listing of the files in that directory, just as if the Workbench disk were in drive DF0. You are now able to insert any disk in your DF0 drive and use the commands in your RAM:C directory freely. What you decide to do is limited only by the commands you choose to include in your RAM:C directory and the amount of memory you have available. When I buy a new box of diskettes, for example, and I want to initialize all of them, I copy the FORMAT command (which is in the SYSTEM directory of your current Workbench disk) to my RAM:C directory and format each one using the CLI rather than the Workbench. By using the CLI and my new RAM:C directory, there is absolutely no disk swapping. Try to do the same thing from the Workbench and see how many disk swaps you have to make for each disk you want to initialize.

What you have done so far requires a little time, and most people would not want to repeat this process each time they boot their Amigas. So, let's look at a way to streamline things.

For reasons which will become clear later, you now need to delete the files from your Workbench disk which you copied to the RAM:C directory. You can do this by using the DELETE command, as shown below:

```
DELETE C/CD <RETURN>
```

Be sure that you are deleting the commands from the 'c' directory on Workbench rather than from the RAM:C directory. If you have not yet added the RAM:C directory to your path, you will not be able to delete any other commands once you have deleted the DELETE command. Likewise, any commands that you deleted before the delete command will no longer be usable either. Once again, without the RAM:C directory path addition, AmigaDOS will be searching only the DF0:C directory (and maybe one or two other places on your boot disk) for these commands. Once these commands are deleted from the 'c' directory, AmigaDOS will be unable to find them. So, if you have not added RAM:C to your path, do so at this time!

Now, bear with me as we go through the next few steps, for some of them may seem irrational. Once we have finished, though, you should see the method in my obvious madness. After deleting the commands from the Workbench's 'c' directory, we need to recopy our RAM:C commands to the Workbench. However, we don't want them in the 'c' directory as before; rather, we want them in a separate directory, so let's create a new one. This recopying is necessary because of space limitations. It would have been easier to copy the commands directly to another Workbench directory initially, but there just isn't enough room to have these commands exist in two places at once on the Workbench disk, for it comes fully packed. Do this by typing:

```
MAKEDIR RAMCLI <RETURN>
```

Once again, you can name the directory anything you wish. I chose this name because it is readily identifiable. Once you have created the directory, you can copy the commands from the RAM:C directory by using one command. In your CLI, type:

```
COPY RAM:C TO RAMCLI <RETURN>
```

As each command is copied, you should see it listed on the screen before you. Now, you have the commands back on your disk. Next time you want to copy these commands to the RAM disk, you need only create a directory on the RAM disk and then you can copy all the files to that directory using only one command, like this:

```
COPY RAMCLI TO RAM:C
```

Then you can type in the command adding the RAM:C directory to your path, and you are ready to use the commands from your RAM disk again. If you were to reboot and try this now, though, you would see that it doesn't quite work this way—yet. Please do not reboot to test me on this. If you do, the startup-sequence will not be able to execute all commands, and your disk would not completely boot. So, read on for now.

The problem which presently exists—which is the same one we encountered earlier—is a result of the command pathway. Remember that at bootup, the Amiga is instructed to look for commands in certain places, like the DF0:C directory. Since certain commands on your disk are no longer in that directory, AmigaDOS cannot find them. When you try to copy your RAMCLI directory to RAM:C, AmigaDOS has no idea that it should look in a directory called RAMCLI for the COPY command. The way to get around this, and make other things a little easier in our task, is to alter the startup-sequence.

To work with the startup-sequence, we must use a 'c' directory file called ED, which is the Workbench's text editor. Don't worry if you've never used it before; just follow the instructions given here and you should have no problem.

The startup-sequence, as I mentioned earlier, is a set of instructions sent to the computer when it is booted. To access the startup-sequence, type:

```
ED S/STARTUP-SEQUENCE <RETURN>
```

This indicates that the file called STARTUP-SEQUENCE is located in the 's' directory of your Workbench disk. Once the file opens, you will see a list of AmigaDOS commands lining the left-hand margin. Using your arrow keys, move the cursor down the left-hand margin to the "D" in DIR RAM:. Actually, there are a number of places you could select, but this is as good as any. Hit the <RETURN> key, and you will create an empty line. Now move the cursor to the far left of this empty line and type:

```
PATH RAMCLI ADD
```

Notice that you do not hit the return key at the end. Once you have done this, hit the ESC key (and release), then the letter "X" key (and release), and finally the <RETURN> key. This will save the changes you have made to the file and exit the text editor at the same time.

Now, next time you boot Workbench, the computer will receive a command instructing it to check the directory called RAMCLI for commands. Try it to see if it works. If, for some reason, your Workbench does not load properly after booting and a message appears on the startup screen indicating that a certain command is unknown, try installing the PATH command higher up in the list of startup-sequence commands. Probably, AmigaDOS is looking for a command at a point prior to being informed where it resides.

To make things even quicker and easier, we could create an executable file to do the work for us. To do so, we need to use the text editor again. Decide on a name for your file, preferably using a name that denotes the purpose of the file. Then type:

```
ED RAMC <RETURN>
```

Once again, I chose RAMC as the name of my file for obvious reasons. You can select anything you wish as the name of your file. Once you have executed the above command, you should see a nearly empty screen before you containing only the words "Creating new file" in the lower left-hand corner. What you will now do is write all the commands necessary to accomplish your project, each on a separate line.

Here is the version I use:

```
MAKEDIR RAM:C  
PATH RAM:C ADD  
COPY RAMCLI TO RAM:C
```

I have not included the <RETURN> command because the sole purpose of the <RETURN> key at the end of each

command line here is to move the cursor to the next line. The <RETURN> key is not necessary in order to execute these commands as when they are typed in the CLI.

Once again, type ESC, "X", then <RETURN> to exit the text editor and save what you have typed. Once this is done, you will have a file on the root directory of your Workbench disk called RAMC. If you want to check this, type DIR <RETURN> and you should see the file appear near the end of the listings that scroll down your screen.

If you have plenty of memory, you might want to have these commands automatically moved to your RAM disk each time you boot your Amiga. If so, open the startup-sequence again (ED S/STARTUP-SEQUENCE <RETURN>) and we will install this executable file. Move your cursor down near the bottom to the line which has the DATE command. Place the cursor on the "D" in DATE, then hit the <RETURN> key. As before, move the cursor to the vacated line, then type:

```
EXECUTE RAMC
```

Now exit the text editor as you did before. As the Amiga goes through the list of commands in the startup-sequence when booting, it acts upon each one. When it reaches the EXECUTE command which you just typed, it will then search the DF0 directory for a file named RAMC. Once it finds the file, it will do what that file instructs it to do. Next time you boot up, watch your screen and you should see the commands in your RAMCLI directory listed as they are copied to your RAM disk. It will take your Amiga a bit longer to boot, true, but it saves you some work. Now you can turn on your Amiga, insert your disk, then go get a cup of coffee and come back to discover everything already done for you.

If you don't want the commands copied to your RAM disk each time you boot, do not include the executable file in your startup-sequence. Instead, any time you want the commands installed in your RAM:C directory, simply type

```
EXECUTE RAMC <RETURN>
```

in your CLI window, and then all three commands in the file will be executed. Thus, once all of the changes have been made, all you have to do is type two short words each time you want to create a RAM:C directory, complete with numerous AmigaDOS commands.

With such commands operating from your RAM disk, you can now inspect various disks, move files, read documentation, and do many other tasks without swapping disks. Perhaps it's not as convenient as having a second disk drive, but for some of us it will have to do—at least until that next paycheck comes in.

•AC•

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HELP DISK'S

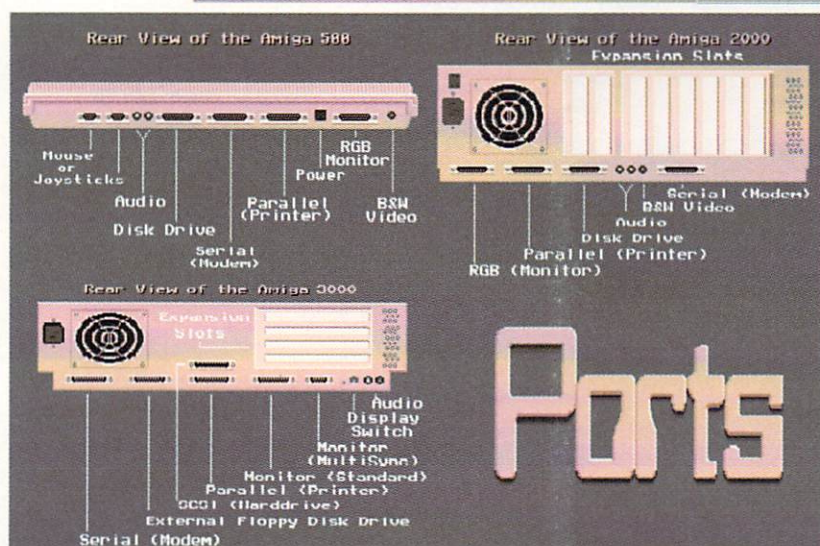
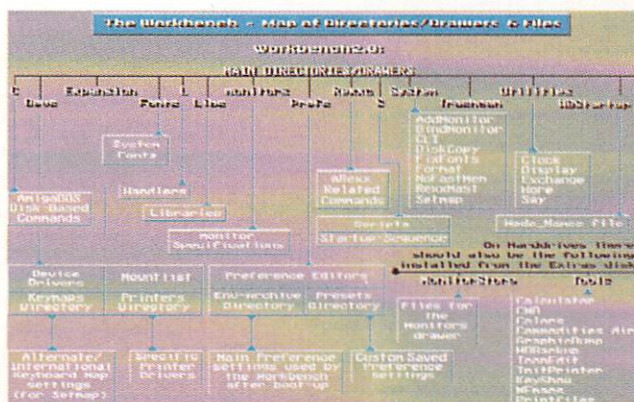
The Buddy System

for AmigaDOS V. 2

by Chuck Raudonis

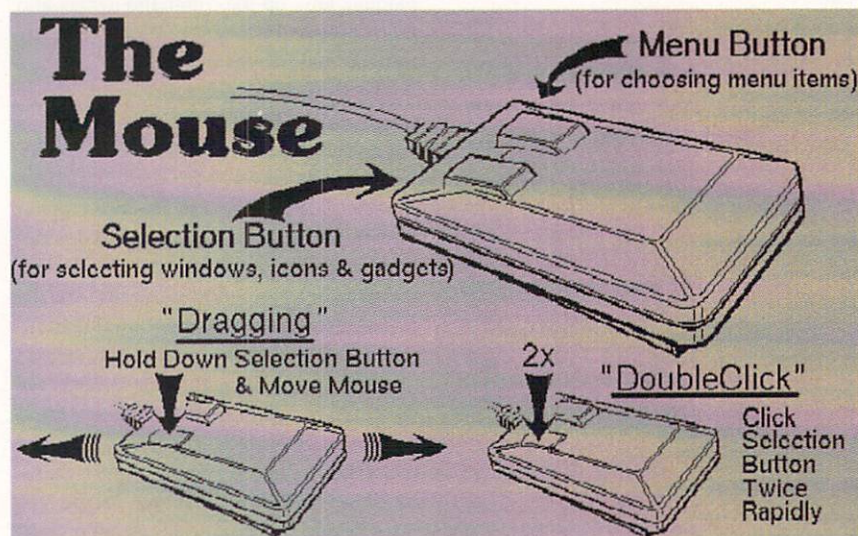
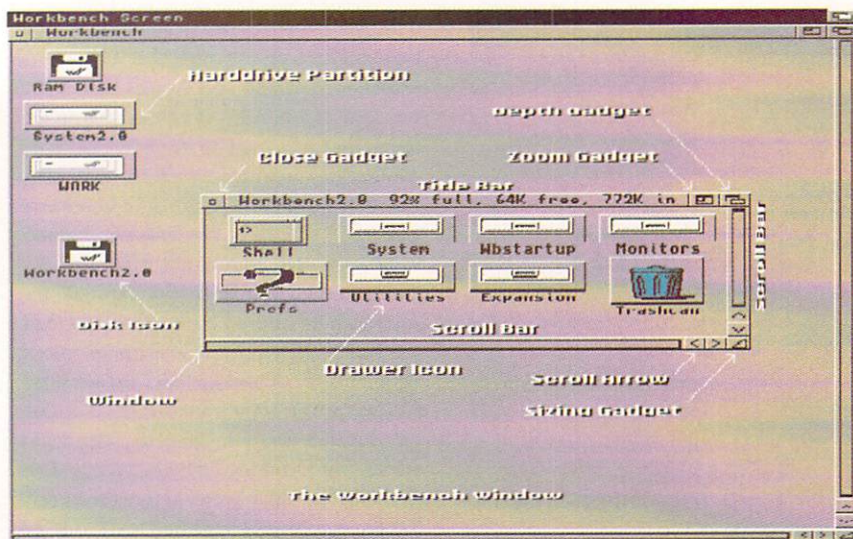
WHEN YOU WERE LEARNING how to swim, the instructor assigned you a buddy. The theory was that the two of you worked together. Under normal circumstances, you never knew that your buddy was there. However, if you got into trouble, your buddy was there waiting to save you. I cannot think of a better name for this package than "The Buddy System." It will install itself quietly and wait to help you when you call.

Right: Bring up a structured list of all your drawers, directories, and files. Below: The Ports Explanation screen.



The Buddy System is an on-line, real-time guide to your Amiga that has several uses. For the brand new Amiga user, it can function as a tutorial. It will teach you the terms that you need to know to use your Amiga, and provides a walk-through tutorial with a comprehensive set of topics that will teach you all of the features, options, interfaces and commands that run the Amiga. After you have run through the soup to nuts tutorial the system provides, the Buddy System then takes up the role of your emergency backup. Say you are at the CLI prompt and you want to JOIN two files, but you are not sure how the command works. The last thing that you want to do is to clobber a valuable file! Before the Buddy System, you would have had to dig out the manual, look up the command syntax and then perform the function. With the Buddy System, two presses of the HELP key or a double click of the right mouse button brings up a menu of help items. Locate the JOIN command in the menu, and view the syntax.

The Buddy System's demo functions are an added attraction. For most major functions, the system has recorded demonstrations. When a demonstration is selected, your Buddy takes over the keyboard and the mouse. The function in question is demonstrated for you in a test mode. All keystrokes and any applicable mouse movements are demonstrated. A running commentary about what is happening is provided across the top of the screen and is spoken by the narrator device. This is a perfect use for the narrator device, as you can devote all of your attention to the demonstration while listening to the description from the narrator. All of the text in the system is linked via a Hypertext interface. While you are reading a description of one item, related topics are listed along with the current item. To expand the description of one of these related items, just click on the word and the description is displayed. This allows the user to traverse the system at will to get the information that is needed. While zipping around the system, the hypertext interface is so simple to use, it is easy to lose track of where you started in your quest for information. To help you find your way back, the Buddy System provides a marker function to allow you to drop a marker before you start on a new thread. When you want to return to the original position, press a key and you are back where you started. In addition to the text links, the system has many excellent IFF pictures that help illustrate topics. These



From top to bottom, three of your best buddies; The Workbench window, the Mouse Window, and a window which gives the definition, function, format, location, and a demonstration of commands and other items such as directories and files.

pictures are also displayed by the point and click method.

The system is run from either the keyboard or with the mouse. All functions can be accessed by either method. The system has a comprehensive search function that will locate a text string in any file even if it is not part of the hypertext interface. This function will let you locate any reference to a topic or word that is in the system.

The system has over 750 help topics. These range from all of the Amiga DOS commands, through window and system manipulation to Amiga specific definitions. One of the items on the help menu is a glossary. The glossary contains all of the words and terms that a new user needs to understand to run their new computer.

If you are a new user, the Buddy System will give you the information that you need to get up and running with your new Amiga quickly. Run through the introduction section to get a thorough overview of the system. When you are through with the introduction, install the system into your startup-sequence for future use as a reference tool. Don't worry if you don't know what a startup-sequence is, the Buddy System includes a very thorough discussion of startup-sequences and what goes in them. If you are a new Amiga User and you want to get up to speed quickly, you can't afford to be without the Buddy System. If you are an experienced user, the Buddy System is still a valuable asset to add to your system as an on-line reference for those things you don't do daily. Have a look at the Buddy System, it just might keep you out of the deep end of the pool.

•AC•

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Installing and Using An IBM Mouse with Your Amiga

by Phillip R. Combs

Do the buttons on your Amiga mouse still respond the way they should? Perhaps you've fought too many aliens, or maybe you've just worn them out from daily use. Sooner or later the buttons will no longer work well, and it will be mouse replacement time. Rather than buying another stock Amiga mouse, consider purchasing a better replacement—one found on the shelf of your nearest IBM clone dealer. Most IBM-compatible "bus mice" produce Amiga-compatible signals, and they give you several advantages over the Amiga mouse.

First, most of these mice are styled better, making them more comfortable to use. Second, many of these mice use quality microswitches, rated in millions of cycles, instead of the cheap switches found in the Amiga mouse. These microswitches produce a solid, satisfying click when pressed. The only problem is that the connectors on these two types of mice are different. While the Amiga uses a DB-9F (female), IBM-compatible bus mice employ a 9-pin mini-DIN connector.

I will show you two methods of adapting these IBM bus mice to your Amiga. You should have some skills in basic electronics and assembly techniques to tackle this project. If you don't, talk a skilled friend into doing the work. Another suggestion is to visit your local user's group, as you can usually find at least one person there with electronic expertise. You will need certain tools before starting this project, I have listed those along with a complete parts list for both adapter- and direct-conversion methods in the table on page 46.

Mouse Types

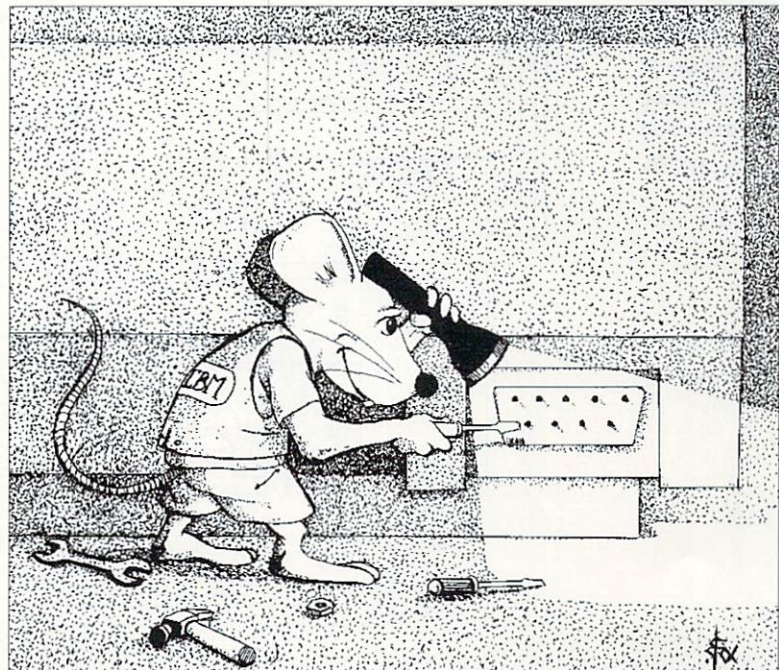
There are three basic types of mice: optical, electromechanical, and optomechanical. The Amiga's mouse, and most IBM-type bus mice, are optomechanical. Explaining the intimate details of mouse design is beyond the scope of this article. You can find an excellent article on the subject, "The Mouse That Roared," in the November 1990 issue of *Byte*. However, I will give you a general idea of how optomechanical mice work with the Amiga. Figure 1 is a schematic of a "typical" IBM-type bus mouse.

The mouse translates your hand movements into cursor tracking information. A ball inside the mouse rolls when the mouse is pushed. This ball makes contact with two axles, one for the X axis (left and right movement) and one for the Y axis (up and down movement). Mounted on one end of each axle is a plastic disk with slits around its edge. On one side of this disk are two infrared LEDs. On the other side of the disk, opposite the LEDs, are two infrared phototransistors. The LEDs are always on, and they shine through the slits in the disk onto the phototransistors. When the ball rolls, the disks turn, and the

bands between the slits break the flow of light to the phototransistors. This causes the phototransistors to turn on and off, producing pulse trains. These pulse trains, two from each axis, are sent to the computer for processing. One of the two pulse trains from each axis is 90 degrees out of phase from the other. The computer uses this information to determine mouse direction.

Most mice differ in the actual circuitry used to produce and process the pulse trains. I discovered many design variations among the different mice I tested while researching this project.

Despite the differences, they all performed flawlessly when connected to the Amiga, as they produced Amiga-compatible output signals.



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In the IBM world, mice can connect to the PC in two ways—bus and serial. Serial mice, as you may have guessed, connect through the RS-232 port. Serial mice cannot be used with the Amiga's mouse

ports, even though some of them have the proper 9-pin plugs already attached, as they do not produce the proper signals. Bus mice require an interface card that plugs into the IBM expansion bus. Most of these mice connect to the card through a circular mini-DIN 9-pin connector. This connector is similar to an AppleTalk connector, except that AppleTalk connectors only have 8 pins. After testing several different mice types, it seems that this connector's wiring is standard.

These 9-pin mini-DIN connectors also seem to be non-existent. The sources I found only carry the AppleTalk-style 8-pin connectors. If any readers happen to locate a source of these 9-pin connectors, please contact me through this magazine and I will pass the information on to other readers. In my search for a supplier, I found one company that carries a 4-foot IBM-compatible bus mouse extension cord. This cord has the proper female connector on one end, and became the foundation for the adapter cable.

Method 1: Building an Adapter Cable

Some of you may wonder why I would want to build an adapter cable, instead of simply changing the mouse's connector. There are actually several reasons for using this approach. First, most mice have thin, flexible cables that use foil strips for the inner conductors, similar to the material found in modular telephone cables. While adapting mice with these cables can be done—and I will show you how—the soldering and construction must be done with a great degree of care.

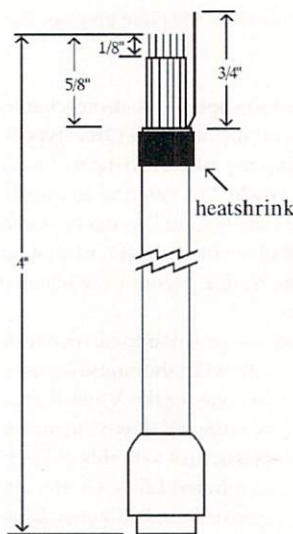
Second, most IBM mice come with lifetime warranties that would be voided if you clipped their original plug, or used them in an application their makers never intended. I believe anyone would be foolish not to take advantage of a free lifetime on any product. If the mouse ever dies, you can simply unplug it and return it for a free warranty replacement. Third, if you ever find another mouse that you like better than your original choice, you can pack the unwanted mouse in its original box and sell it.

The following bus mice have a 9-pin connector, and I have tried them successfully with the adapter: the Microsoft mouse, the Logitech C-7—I call it the TR-7 due to its wedge-like appearance—the Logitech Series 9 (white case, rounded top), the new Logitech Mouseman mice, and the two- and three-button mice included with the ATI VGA Wonder and VGA Wonder+ video cards. I have not tried the

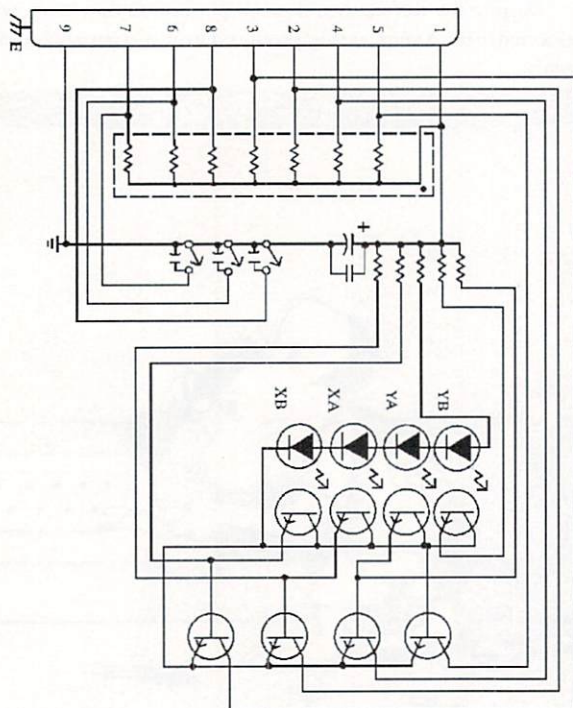
Logitech Trackman (trackball), but Logitech's technical support people tell me Trackman is plug-compatible with their other bus mice. Left-handed Amiga users take note: the Mouseman ships in right- and left-handed versions. This gives you access to a true left-handed mouse!

These are the steps for constructing your adapter:

1) Refer to Figure 2. Cut the bus mouse extension cable about 4" from the jack end. This end will mate with the mouse. Slide the DB-9F connector backshell onto the



Right: Figure 1, schematic of IBM-type bus mouse. Far Right: Figure 2, the bus mouse extension cable.



cut wire, small end first. This particular backshell was chosen for its low profile design. It was the only one I found that would fit into the case hole on the A2000.

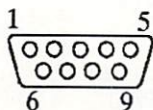
2) Trim the cable's outer jacket back 3/4". Be careful and do not nick the insulation on the inner conductors.

3) Separate the shield wire from the other conductors—it should have no insulation on it. Cut the other conductors down by 1/8", then remove 1/8" of insulation from each inner conductor. Carefully tin each exposed wire (except the shield) with solder.

4) Slip a 1/2" long piece of insulating tubing over the shield wire, then tin the tip of this wire. Use the needle-nose pliers to bend the shield wire at a 90 degree angle about 1/8" down from its tip. This will keep the tubing from falling off.

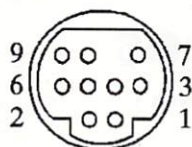
5) Slide a 1/4" long piece of heatshrink tubing over the inner conductors and onto the outer jacket of the cable. Align the heatshrink tubing with the edge of the jacket where the inner conductors emerge. Use a match, lighter or heat gun to shrink the tubing around the outer jacket. Do not touch the flame to the tubing or heat the tubing for too long, as it will break. Hold the flame about 3/4" to 1" under the heatshrink tubing, and rotate the wire with your fingers to heat the entire piece of tubing. Discontinue the heat when the tubing has contracted on all sides.

Amiga Joystick Port



viewed from
front of jack

IBM Bus Mouse Port



TRANSLATES TO:

1 - V-pulse	4 - YA
2 - H-pulse	2 - XA
3 - VQ-pulse	5 - YB
4 - HQ-pulse	3 - XB
5 - Middle button	7 - SW 2
6 - Left button	6 - SW 1
7 - + 5 volts	1 - + 5 volts
8 - Ground	9 - Ground
9 - Right button	8 - SW 3
"E" - Chassis Ground	"E" - Chassis Ground

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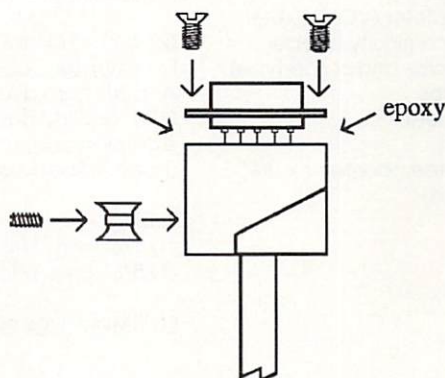
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Circle 110 on Reader Service card.

6) Now you will use a VOM (volt-ohm-meter) to trace the wire's inner conductors. I thought about including the wire colors of my cable as a guide, but decided against it. You should never trust that connector pins will use the same wire colors on every cable. A manufacturing error could prove costly if the wires for +5 volts and your left mouse button got switched. Press the button and... well, you can imagine what happens when you short a voltage to ground.

Use Figure 3 as a guide. Locate pin 1 on the mini-DIN jack, and insert a straight pin into the hole. Clip one VOM lead to the pin. Use the free VOM lead to touch each tinned wire until you get a reading of 0 ohms, or your continuity beeper goes off. Solder that wire to the proper DB-9F location as shown in Figure 3. Move the straight pin to the hole for pin 2 and repeat the process until all nine inner conductors are hooked to the DB-9F.



Far Left: Figure 3, guide to the pin configurations for the Amiga Joystick Port and the IBM Bus Mouse Port. Left: Assembling the backshell.

As you follow this process, you may hit a point where you become confused. The Amiga pinout calls for left, middle, and right buttons. The Amiga provides for a three-button mouse, although a two-button mouse is included with the computer. To my knowledge, no commercial software utilizes a middle mouse button, though you may wish to write a program that does. If you selected a two-button mouse as your replacement, pin 7 on the mouse's plug will not be internally connected. Connect the wire on the adapter cable as called for; you may wish to add a three-button mouse later.

The final step is to solder the shield wire to the metal frame of the DB-9F connector. You should first tin the metal area on the connector near where the metal meets the plastic, in the area between pins 1 and 6, or pins 5 and 9. Soldering the wire here provides clearance for the backshell to slide onto the DB-9F. Either area will do, but you should use the side closest to where the wire naturally falls when it exits the cable. Tinning the metal is easier if you first scrape the area with a flat-tip screwdriver or knifeblade.

7) Now it is time to assemble the backshell (Figure 4). There are several ways to do this. Screws are normally used to hold the backshell on, but standard screws can create a problem. If you look at the A500 or A2000's mouse port, you will see a stud on either side of the port. These studs hold the mouse ports in place. On the A1000, the mouse ports are even with the outer case. If the backshell were assembled with standard screws, the screw heads would keep the mouse plug from seating properly. I used 4-40 x 1/4" flat-head screws, after enlarging the holes in the DB-9F connector with a #5, 82-degree countersink drill bit. The screw heads were then low enough to allow proper connector seating. If you don't have access to one of these countersink bits, there is another way to mount the backshell.

Apply epoxy cement to the plastic backshell, around the areas where the connector's mounting ears will contact it. Slide the backshell onto the DB-9F, and use C-clamp on each side to apply pressure until the glue sets (at least 24 hours to insure full cure). Remove the clamps after the glue sets. You will have to exercise caution when plugging and unplugging the connector from the computer—you may not get a strong bond, and the backshell may come loose. This method may not be the best, but it does work.

Next, insert the wing-shaped plastic retainer into the hole on the backshell's side. Insert and tighten the headless screw to the point where the retainer rubs the wire but doesn't prevent its movement. Carefully push the cable into the hole about 1/8", then tighten the screw to prevent wire movement. Do not overtighten the screw—you will be able to feel when the cable is clamped tightly enough. This completes your adapter cable. Plug the mouse into the adapter cable, then plug the other end into your computer.

Method 2: Hard-wiring The Plug

This method has several advantages, in that it requires fewer parts and looks more elegant. Its advantages are offset by more difficult construction and the loss of your mouse's warranty.

The steps to a successful conversion are given below:

1) Carefully look at the mouse's outer case to determine how it opens. Screw holes may be concealed under mouse feet or stickers. Remove any screws you find and carefully separate the case halves.

2) The wires in the mouse cable will connect to the PC board in one of two ways. They will either direct-solder or connect to a header

Tools, Parts, and Sources

Tools Needed

- Soldering iron (15-25 watt)
- Rosin core electronic solder (60/40)
- Needlenose pliers
- Small wirecutters
- Wire strippers
- Small Phillips and flat-blade screwdrivers
- Volt/Ohm Meter (VOM) preferably with continuity beeper
- Test leads (clip- and probe-type)
- (2) C-clamps
- Epoxy cement
- Straight pin
- #5, 82-degree countersink drill bit (see text)

Parts List

For Direct Adaption

- (1) DB-9F Female solder connector
Radio Shack 276-1538

- (1) DB-9 one-piece backshell

Cinch or Cannon DE-51218
Mouser Electronics ME152-1109

- (2) 4-40 x 1/4" flat-head screws

For Adapter Cable

- All parts from direct adaption list, plus:
(1) 4-foot IBM bus mouse extension cable
(Roger's Specialist)

Tubing:

- (1) 1/4" long, 1/4" dia. heatshrink
(1) 5/8" long, 1/16" dia. insulation

- (1) IBM bus-type optomechanical mouse

Sources Mentioned

9-pin Bus Mouse Cable
Roger's Specialist
27712 Pinehills Dr.
Santa Clarita, CA 91351
Voice: (805)-251-2520
FAX order: (800) 366-0579

DB-9 One-piece backshells
Cinch brand:
Newark Electronics
4801 N. Ravenswood Ave.
Chicago, IL 60640-4496
(312) 784-5100
min. order required

ITT/Cannon brand:
Capstone Electronics
1100 W. Thorndale Ave.
Itasca, IL 60143
(708) 250-0300
min. order required

Mouser brand:
Mouser Electronics
401 Highway 287 North
Mansfield, TX 76063
(800) 34-MOUSE
min. order required

plug that matches pins on the PC board. You need to trace out which wires connect to which pins on the mini-DIN plug. If the PC board is clearly marked with legends that match the callouts given in Figure 3, the hard part of your job is over. You will be able to skip some of the following steps.

Draw a basic layout of the PC board that shows where the wires connect, and what colors they are. If they connect to a header plug, note the plug's orientation and then pop it loose. This will make your job easier.

3) Use a VOM to trace each wire from the PC board to the mini-DIN plug. You may need a third hand to help with this step. If your mouse had a header plug, start by sticking a straight pin in one hole on the plug, then clip a VOM lead to the pin. If the wires direct-solder to the PC board, wedge one VOM probe against the wire where it enters the top of the board. If done correctly, the probe should displace the insulation and contact the inner conductor. Use the free VOM probe to touch each mini-DIN plug pin until you read 0 ohms, or the continuity beeper sounds. As you find each wire, mark the mini-DIN pin number on the diagram you drew. The shield wire will be insulated, and will connect to the metal ring encircling the pins on the mini-DIN plug.

4) After locating all the wires, cut the mini-DIN plug off. Mount the backshell and prepare the mouse cable as discussed in Steps 1-4 of Method 1, but keep the following points in mind. The cable's inner wires are made from thin foil strips. You should proceed with caution. When tinning the foil conductors, heat them briefly, then

back off. Repeat this step several times until the foil is completely tinned. You will not need insulating tubing for the shield wire.

5) If the mouse cable's wires were all different colors, this part is easy. Simply refer to your diagram and Figure 3, and solder each wire to its proper place on the DB-9F. If the wires were all the same color, you will need to use the VOM to trace each wire again before soldering it. Solder the shield wire to the metal DB-9F frame as described in Step 5 of Method 1.

6) Once all the wires are soldered to the DB-9F, mount the backshell as described in Step 6 of Method 1. Then reassemble your mouse, and it should be ready for use.

The Amiga is an amazing computer. However, many potential users come away with a bad impression from its cheap "look and feel." My primary impressions of a machine are based on tactile response—the solidity of the keyboard and the feel of the mouse. If you interact with a machine all day long, you want that interaction to be comfortable. By adding a better mouse to your Amiga, you not only improve the human interface, but you can blast the enemy longer without fear of destroying your mouse.

•AC•

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Fall River, MA 02722-0869

Coming Soon...

Next Month: *Amazing* will look at the Amiga in the home and business environment. Also featured will be reviews of some of the hottest new products for the Amiga such as Directory Opus, Scenery Animator, and Secretary along with a host of other great products sure to make your Amiga the best on the block!

Next Month: *Amazing* will introduce a special monthly section on AREXX!

Coming Soon...

HAM-E Workshop

Understanding 24-bit Color

A look at Progressive Peripherals'

Video Blender



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AMIGA In Europe!



Cologne, Germany, and London, England

Europe was the site of two major Amiga events this past November, AMI Show's Amiga '91 in Cologne, Germany (October 31-November 3), and The World of Commodore in London, England (November 15-17). Cologne attracted over 75,000 visitors. However, the major increase was in London, where over 43,000 attendees visited the show, an increase of over 147% from the 17,000 attendees of a year before.

The rapid increase in attendance has been made possible in no small part to the tremendous growth the Amiga has seen in Europe, especially in the U.K. Commodore sales people and European developers are seeing a surge of interest in the Amiga with figures expecting to top 800,000 units sold in the U.K. by the end of the year. As if to illustrate this figure, attendees arrived in such crushing numbers on Saturday that show officials were forced to lock the doors several times to stop overcrowding in the large hall of Earl's Court II.

Cologne saw its level of excitement as attendees were arriving at 8:30 a.m. for the 10:00 opening of the event on Friday. Some attendees were forced to wait for over two hours to gain entrance to the show as they stood in line for tickets. Although his comments are unconfirmed, one exhibitor stated that the show officials ran out of tickets during the event and were forced to produce additional tickets on equipment in the booths.

Cologne has become the site of what some exhibitors call the European event. This year, vendors from Europe, North America, Australia, and elsewhere filled four large halls of the sprawling exhibition site. Booths have come to resemble those seen in major events such as the Consumer Electronics Show or COMDEX in the U.S. One game company had a two-story booth complete with offices on the second floor.

Commodore International took advantage of this event to provide an open forum between Amiga distributors in Europe and

Amiga vendors from around the world. Over 125 people attended the forum where distributors and vendors were permitted to present their products or services to the group. While there was some grumbling about the rigid approach and some inability to meet everyone each group wanted to, it was a success with vendors finding new markets for their products and distributors rounding out their product lines.

Without a doubt, these two events place major emphasis on what is happening with the Amiga in Europe and just how exciting the Amiga is. With the two events only weeks apart and many vendors announcing the same products at each event, we have combined our report to list many of the new products announced.

Commodore

Commodore was a major presence at each event. CDTV was strongly evident, with an emphasis on the product and software now available. In London, CDTV was not only shown playing on an Amiga 500 with the proposed A690 CDTV drive, but many dealers were selling the keyboard, mouse, and disk drive upgrade units to make CDTV work with standard Amiga software.

Both Commodore Germany and Commodore U.K. used their booths to promote different aspects of the Amiga. Vendors appeared during different segments of the shows to demonstrate products and answered questions. Micro-Systems Software presented *Scribble!* Platinum Edition, their word processor for the Amiga, complete with a spelling checker, thesaurus, multiple windows, cut and paste, mail merge, IFF graphic support, and more. Digital Creations used some time in the booth to show their new DCTV PAL version. Digital Visions was seen demonstrating SCALA 2.0. These were just some of the constantly changing demonstrations going on during each show.

Commodore was also showing the wide

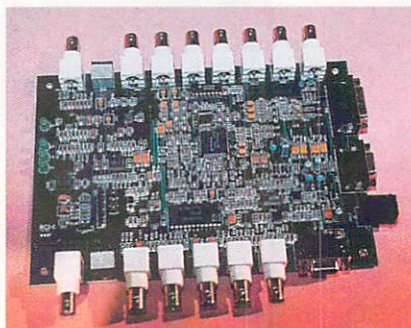
variety of Amigas available, from the extremely powerful and versatile Amiga 3000 Tower to the Amiga 500 plus. The Amiga 500 plus contains 1MB of RAM on board (expandable to 2MB), the new enhanced chip set, Kickstart 2.0, and 512K of ROM.

Hardware

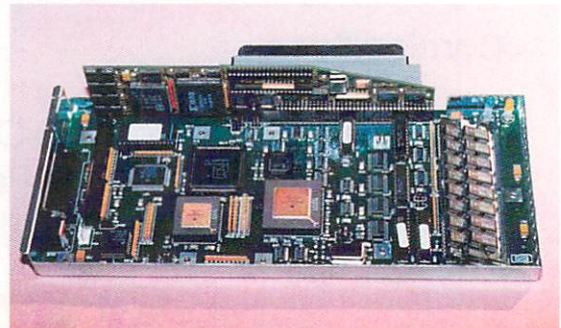
GVP, Great Valley Products, occupied a notable presence at both the Cologne Amiga '91 and the London World of Commodore. In Cologne, GVP was awarded a special honor by the publishers of Amiga-Magazin of Germany, whose readers rated GVP's Impact A500 HD8, their A2000 hard card, as well as their A2000 accelerator as the "Best Hardware Product for 1991" in each category.

Mr. Gerard Bucas, President of GVP, held a special ceremony for the press and GVP's international distributors, at which he announced that GVP was listed as the eighth-fastest growing company in the Philadelphia and surrounding area. Mr. Bucas demonstrated his commitment to the Amiga market saying, "Our objectives are to make sure that every single possible peripheral in the Amiga market has a GVP label on it. If everybody had a GVP peripheral in his or her Amiga, it would make everybody's job a lot easier." Mr. Bucas illustrated his goal by announcing a few of the new products that GVP would be shipping soon.

For A500 owners, GVP announced a new A500 accelerator internally dubbed, the A530. Using the same case as the standard A500 hard disk system, the A530 will ship as a 40MHz accelerator for approximately \$500 more than a hard drive system of the same configuration. To keep it simple, GVP will only offer the 40MHz speed version, but they have offered an optional floating point unit that is 50MHz, and it is available with an optional 8MB of 32-bit wide 16 ns RAM all in the same box. Along with a SCSI controller, the box will also have a turbo/game switch



GVP makes multiple announcements
Left: GVP's Tarantula board provides multiple connections for the IV 24
Right: The GVP/PC286 is a complete AT computer in a card small enough to fit in GVP's A500 hard drive system.





Amiga owners crowd the aisles. Both London (Left) and Cologne (Right) experienced crushing crowds of excited Amiga enthusiasts.

replacing the original game switch. When placed in one position, the Amiga will run at the 40MHz speed, and changing the switch will allow game users to run their favorite pastime at the standard 500 pace. The A530 should be available by January with upgrades for current owners to be available sometime in February.

There was another announcement for A500 owners with the introduction of the GVP/PC286. The GVP/PC286 is a small card designed to fit in the slot of the standard GVP A500 hard disk system. The 16MHz PC 286 emulator contains 512K of RAM. The GVP/PC286 will also fit in GVP's new accelerator for the Amiga 500.

GVP's MultiPort I/O extender will also ship in January '92 for the Amiga 2000 and Amiga 3000. This serial card interface has a special connector which is cabled to an impressive I/O extender Box. The box contains two RS232 serial connectors and a parallel port. In addition, the two serial ports are independently connected to four additional MIDI ports each. There is one MIDI IN, one MIDI THRU, and two MIDI OUTs for each channel for a total of eight MIDI connectors. Each serial line is 16 bytes FIFO per channel, which will supply up to 32,000 bits per second for use with MIDI, high speed modems and other speed-intensive requirements. Amiga users will be able to configure the ports independently as MIDI or serial under software control. The suggested retail price is \$399.

Tarantula was the internal code name for GVP's RGB splitter for the Impact Vision 24, which will be shipped with the IV24 in January. The Tarantula allows IV24 owners to connect two composite video sources, an SVHS video input and a RGB input, and then on their Amigas can select by software which source they want to have as input. This means that any of the four sources can be converted to RGB. In addition, the composite input can be used with normal consumer level VCR's and Camcorders, etc. for frame grabs. The box also contains a composite out as well as a SVHS out for recording or other uses.

The IV24 currently contains an RGB output and a VGA output for use with different monitors. For professional use (and at a price of approximately \$499), there is an option to allow the RGB input to be YUV input

in order to connect the unit directly with high-end video equipment. This is cabled separately from the VGA connection on the IV24 to the RGB connectors on the Tarantula. The optional RGB input is made valuable by the RGB output, which can be software controlled and converted to a YUV professional output for use with high-end component video. You will be able to now watch your monitor while recording the output on high-end video equipment.

GVP rounded out their announcements by stating the A3000 G Force 040 accelerator cards would be shipping with the introduction of Commodore's Kickstart 2.0 ROM for the Amiga 3000. In addition it was stated that a A2000 040 would be available in late February.

Supra's booth made a big impression at both shows. Alan Akerman, Supra's president, was very excited about the introduction of the Supra Turbo 60 which runs at 25 MHz to make your Amiga three times faster than a standard Amiga 500, 2000, or 1000 at a price of only \$199 U.S.

Supra displayed their 2400 Plus MNP 5 & V.42bis modem (\$199.95) and the SupraDrive 500XP, their hard drive package for the Amiga 500. Supra also announced that they were shipping a FAX modem in the Macintosh market that would be available for the Amiga soon. The FAX modem was selling for \$399 for the 14400 Baud modem and \$299 for the 9600 baud version. Both handle data compression, voice, answer, and caller ID.

Mr. Akerman announced that the 68040 Amiga 3000 board from Supra would be available in February of 1992 at \$1500 for 4MB. The board is expandable to 64 MB. He went on to say that Supra had designed the board to run at 40 MHz when the processors were available. It uses a special technique of switching the four banks of interleaved RAM. Mr. Akerman said, "The RAM is four times faster than its actual speed because we have four banks of it. So 100ns RAM performs like 25ns RAM. This allows us to build a less expensive product at a higher performance." An Amiga 2000 version will be available around April.

In Cologne, ICD presented their 85 megabyte internal hard drive for the Amiga 500. The Nova 851 will retail in the U.S. for \$799 while the 601 will sell for \$599 and the 201 will

retail for \$399. In addition, ICD introduced the AdRAM 510 Plus for use with the Amiga 500 Plus. The AdRam 510 Plus contains 1MB of chip memory to allow the 500 Plus to expand from 01MB of RAM standard to 2MB.

Progressive Peripherals was showing their 040 accelerator on the Amiga 2000, with shipping dates promised in November. AC has already received one of the shipping units for product testing and review.

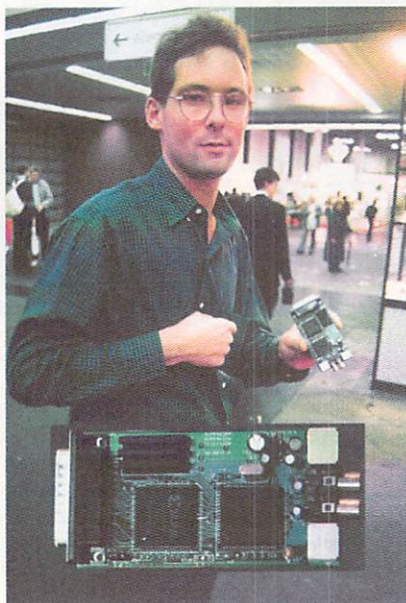
Digital Creations took advantage of both Cologne and London shows to introduce DCTV-PAL, a high-quality color enhancement for all Amigas. For less than £500, using digital composite technology, real-time animation in millions of colors is now possible. It includes color video digitizer.

ROMBO Ltd. demonstrated their Video Colour Splitter in both Cologne and London. The Video Colour Splitter allows Digi-View Gold users to use a VCR (with perfect freeze frame) or color camera for frame grabbing. The splitter replaces the color filter sets found in other digitizers. ROMBO's The Complete Colour Solution is available for the Amiga as well as the Atari ST and the IBM PC. The Complete Colour Solution allows a user to grab mono images from any source and color images from any still source, digitize up to 16 monoframes, animate up to 16 shade images, cut & paste, have full palette control, add text or draw within the art package, and choose between capture resolutions standard and dynamic interlace.

In London, Cortex Design Technologies featured the Cortex 8MB RAM Expansion for the A500/A1000 and for the A1500/A2000, as well as their new Kickstart 1.3/2.0 ROM switches.

Available soon from Pandaal Marketing Ltd. is MEGASound, a stereo sampling, sequencing, and tracking package, which includes both sampling/editing/sequencing/tracking software and a MEGASound sampling cartridge, at a special introductory price of £39.95.

Londoners were impressed with The Vivid Group's Mandala Virtual Reality Authoring System distributed in the U.K. by Performance Systems Ltd.. Mandala is a multipurpose multimedia tool that uses a video camera to pull a live image into interactive video/animation environments that you control through your movements as you watch

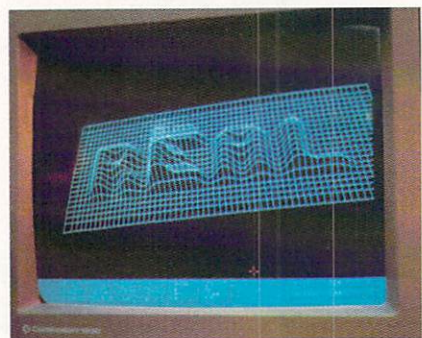


Alan Akerman of Supra proudly displays Supra's new Supra Turbo 60 for the Amiga 500, 2000, or 1000

yourself on the TV monitor in front of you. The user becomes the mouse in the system, allowing for remote control. Mandala is fully ARexx compatible with support for MIDI, serial devices, laser disc players, and video recorders.

AVA Developments Ltd. was showing their Expansion Stands, designed to upgrade the appearance and functionality of the Amiga 500. The Expansion Stand allows the monitor to be positioned above the processor, reducing the footprint and making the system easier to use.

The Amiga Centre of Scotland launched Harlequin+, an enhanced version of the ACS Harlequin 32-bit Framebuffer. The new Harlequin+ has all the features of a standard Harlequin, plus new exciting functions including 24-bit look-up, 15-bit true-color, 8-bit true color, 8-bit pseudo-color, color cycling, full-screen overlay, and an increase from double buffer to six buffers. Upgrades are



Real 3D from Activa now offers pixel mapping, morphing, and much more.

available, and the standard Harlequin will continue to be available.

From Syntronix Systems comes a DTV product called Editman, which has manual and auto modes of operation, with full-screen graphics editing, and the ability to bring in composite captions while source machine pictures are being edited.

Tecnoplus Ltd. displayed their 1MB memory upgrade, AmiRAM 1000, for the Amiga 500. This allows 500 owners to have access to better graphics, improved sound effects, and access to a host of extra features. Also on display was AmiRAM 2000, which upgrades the Amiga 500 from 512K to 2048K. Tecnoplus also had a number of joysticks, mice, and an external hard drive.

Three Dimensional Systems Technology's Twin Channel Video Recording System (£11,995) records any two video signals from any source onto a single video tape. It plays back both signals independently through separate outputs, or they can be mixed for viewing on a single monitor.

Microdeal displayed a number of new packages. AMAS, a MIDI Amiga Sampler, is an 8-bit stereo audio digitizer with a MIDI interface. AMAS software is also included in the package for £99.95. Master Sound is a low-cost, high quality sound sampler for the Amiga which includes The Master Sound Editor, The Master Sound Sequencer, and The Master Sound Demo for £39.95. Quartet (£49.95) packs the power of a synthesizer and a four-track sequencer in your Amiga. It allows playback of up to four instruments simultaneously. StereoMaster (£39.95) is a sampler cartridge that plugs into the printer port and allows the user to analyze the sounds coming in from external devices, such as a CD player. Then, edit the sound and include them in the built-in sequencer.

Productivity

New Horizons Software, also at the London show, displayed their latest line of productivity software. *DesignWorks*, a structured drawing program (\$125), *Flow 3.0*, an information organizer (\$110), and their two word processors, *QuickWrite* (\$75) and *ProWrite 3.2* (£129.95) rounded out their line. A new CD-ROM package for CDTV was announced. It includes *ProWrite 3.2*, *Flow 3.0*, *DesignWorks*, and *ProFonts 1* on a single CD-ROM disk. Under their Central Coast Software division, *Quarterback* (\$75), the hard-disk backup utility for the Amiga, has been upgraded. New features of *Quarterback 5.0* include integrated streaming tape backup, compression, new backup and restore options, optional password protection and encryption, *Workbench 2.0* support, and full ARexx support.

A document processor capable of Page Preview, PostScript Printing, and Printer Support for over 400 internal fonts, *Wordworth v1.1* was one of Digita International's entries at the show. Also released in October by

Digita International is *Home Accounts2*, a finance program for the Amiga.

Soft-Logik Publishing demonstrated *PageStream 2.2*, complete with HotLinks support, PageLiner, and BME, a bit map editor for the Amiga. *PageStream* has a price of £199.99, or \$299.95 in the U.S.

The Danish company Interactivision has a set of new products available for the Amiga in Europe. *InterBase* is a relational database program with user definable graphic screens and printouts, file chaining, wild card search routines, and data export capability. *InterSpread* is Interactivision's spreadsheet program with macros, graphics, data transmission capabilities, user definable screen layout, and a multitude of mathematical and economics functions. *InterWord* is Interactivision's word processing package which includes English hyphenation and spell checker and a 137,550 word dictionary. *InterSound* is a sound sampling program which Interactivision reports will work with any standard sound sampler hardware for the Amiga. *InterWord*, *InterBase*, and *InterSpread* have been designed to function together by transferring data, or work separately with other Amiga programs. All Interactivision packages retail for £49.95 including VAT (Value Added Tax) in the U.K. Although the dictionary and spell checker in *InterWord* contains both British and American English spellings and notations, Interactivision's products are not yet available in the U.S.

Activa International was sponsoring their newest upgrade to their easy-to-use drawing and modeling program, *Real 3D*. Version 1.4 contains 24-bit support as well as morphing and key framing. Morphing is the ability of *Real 3D* to change one object into another over a set amount of animation cells. It generates the frame sequences and then renders the completed animation. Similar to morphing, key framing allows the user to specify the beginning frame and position of a sequence and the end frame and position. The Amiga will then move the object on the prescribed trajectory for the total number of frames and then render the entire animation. With over 24 different ways to bend a selected object, pixel tools that allow the user to create a height and depth to their text, improved texture mapping, and intersection, the ability to create smooth transitional surfaces by joining sections together, Activa has continued their promise to continually improve their product.

Not only did *SCALA* by Digital Vision (distributed in the U.S. by GVP) receive a major update to version 2.0 by its programmers, but its marketing people launched a beautiful *SCALA* magazine to promote the product. Among the new features of this video titling and presentation package are new user interfaces, preloading animations for uninterrupted animation support, sound

support, improved transitions, and the ability to control external devices from within the presentation.

In SCALA 2.0's slide sorter, the user manipulates an icon for each frame of the presentation comprised of a miniature picture of the actual frame. A Digital Vision executive stated that the miniaturization process takes approximately three seconds and can be performed in the background while SCALA is handling other chores. Smaller scripts can group pages together for use in a longer script.

SCALA has also improved the transitions from frame to frame with more choices including bumping, fade in or fade out, easing, flips, roll, push, scrolling, and even a flip-the-old-out-flip-the-new-in effect. Transition can also be accompanied by sound samples or Amiga music. Transitions can also occur between genlock devices, video disks, live cameras, NewTek's Video Toaster, Progressive Peripheral's Rambrant card, or video tape using SCALA 2.0's new external control process. In a move to create a completely flexible presentation program, Digital Vision created the driver to run GVP's Impact 24 (to create picture-in-picture points during a presentation) and a driver that works with ASDG's AdPro to use a scanner at the user's command within a running SCALA 2.0 presentation. Device selection is accomplished through the controller column in the menu.

One extremely interesting use of SCALA was an interactive camera demonstration that used SCALA to select features of a 35MM camera on the computer screen. When the feature was selected, the image would animate the features. This allowed the camera to use a flash, focus (a view finder picture was shown that went into focus while the lens was seen moving), and more.

Adept Development presented their *Painter 3D* which is a three-dimensional modeling program. Objects are drawn in outline and then extruded or rotated to create a three-dimensional shape. Scenes are composed of objects which are manipulated in wire frame or hidden-face perspective. Objects can also be saved in other Amiga formats. Although price and availability were not known at press time, Adept has already alerted its users to two new titles yet to be released, *Painter 3D Animator* and *Painter 3D Fonts*.

MichTron released *Personal Finance Manager* (£29.99), a home finance program for the Amiga. PFM multitasks, balances a bank account, handles credit and debit, and, according to its developer, is as easy to use as a calculator.

You can now go on safari with *RealThings Animation: "Safari" and "Sea Life"* are volumes 4 and 5 in the *RealThings Library* of animated clip art.

Games & Education

Activision presented six games for the

Amiga: *Beast Busters*, *Death or Glory*, *Deuteros*, *Hunter*, *R-Type II*, and *Shanghai II*. *Beast Busters* unfolds in subways, riversides, and derelict streets, where monsters react intelligently to your moves. Relive 12 historically accurate air combat missions in 12 of the best-known warplanes of all time, spanning six eras, from WWI to the modern day in *Death or Glory*, soon-to-be released for the Amiga. In *Deuteros* it is the end of the 31st century. Man is now living on the Moon, but has taken an interest in Earth once again. The race is on to develop Earth's resources, to research new technology, and to build for future adventures. *Hunter* is a new action, adventure, and strategy game played across stunning fractally-generated 3-D landscapes. In *R-Type II* the evil Bydo Empire returns to do battle with your remodeled R-9 StarFighter in a sequel offering even higher quality graphics, slicker animation, and a host of new special effects. *Shanghai II* offers nine tile sets, 13 formations, a Layout Construction Set, plus *Dragon's Eye*, an exclusive challenge for su-

well-researched simulation features of the actual game, allows up to four human players to pit their skills against ten ranked computer opponents. 3-D rolling landscapes and six challenging courses are also featured. *Knights of the Sky* (£34.99), a WWI aerial combat flight simulator, features a two-player option with the use of modems. *Formula One Grand Prix* (£34.99), an addictive racing simulation of the whole Formula One championship season, allows the player to choose from 16 mapped circuits and 26 cars in four difficulty levels. *Covert Action* (£34.99), a contemporary spy simulation by Sid Meier, deals with true-to-life espionage behind today's headlines, such as drug smuggling and terrorism. *Flames of Freedom* (£34.99), the sequel to *Midwinter*, was also on display.

Mindscape International showed *The Miracle Piano Teaching System*, which works alongside the Amiga and offers 360 self-teaching lessons. The user learns about rhythm and music notation, and learns single and two-hand playing while accompanied by the

Commodore was a major presence at each event. CDTV was strongly evident, with an emphasis on the product and software now available.

perior players.

Domark Software Ltd. demonstrated their newest releases which included *Shadowlands*, *Pitfighter*, *Columbus*, and *Super Space Invaders*.

Europress Software presented some interesting facts about its operation. Its "Fun School" line accounts for 79.6% of all retail sales of educational software in the U.K. Its "Fun School 2" claims to be the best-selling educational title, with sales exceeding 200,000 units.

Electronic Arts, announced the introduction of *Black Crypt* for January, *Birds of Prey-The Ultimate Flight Simulator* for December, *The Gods Are Back!* also for December, as well as *Powermonger* and *Star Trek: The 25th Anniversary*.

In the simulation software department, Microprose was showing quite a bit of new products. *Special Forces*, a fast-moving strategy/action title, is set amid a maelstrom of terrorist incidents, drug deals, and military junta takeovers. Your four-man team of soldiers must undertake 16 highly delicate missions. The Planet Editor and two scenario discs are now available for *UMS II*. The Planet Editor allows the player to create his own world and battles in an area as large as the real world's surface. The two scenarios are Southeast Asia 1946-1964 and The Pacific during WWII. *MicroProse Golf* (£34.99), with

computer's digitized stereo samples. As for entertainment, *Paperboy 2* is filled with a number of new scenarios, characters, and challenges for our favorite *Daily Sun* newspaper delivery person. *Moonstone: A Hard Day's Night* combines fast combat action with subtle role-play adventure. Find the Moonstone and bring it back to its spiritual home—Stonehenge. *Knightmare* is a creative role-playing adventure where you are challenged to solve complex puzzles, logic problems, and riddles. *4D Sports Boxing* (£24.99) is the most accurate sports simulation. Create your own boxer and train and build them up to be lean, powerful fighting machines.

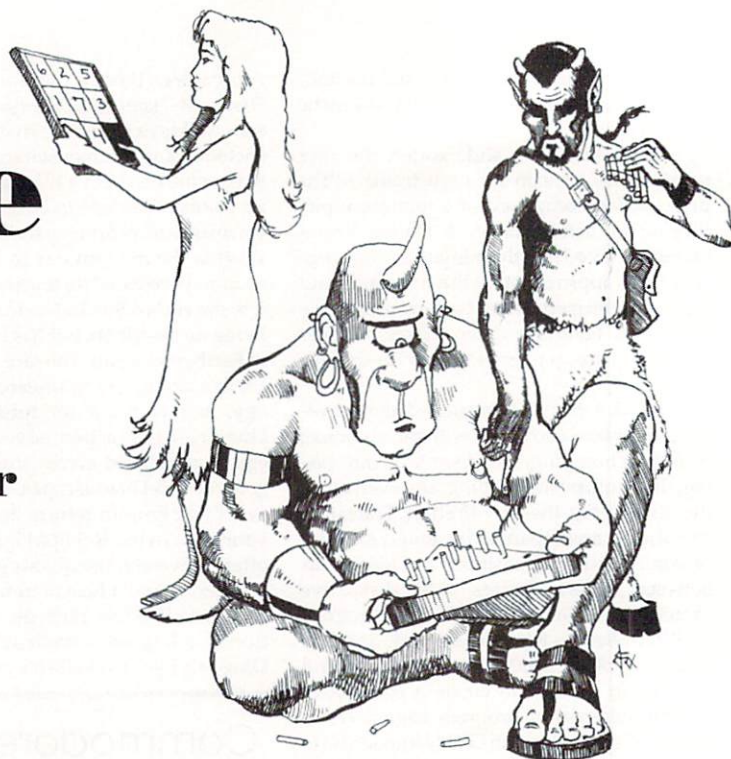
Mirrorsoft presented its winter edition of games, which provides a range of labels from Imageworks, Sega, Acclaim, Cinemaware, PSS, Spectrum Holobyte, Mirror Image, and FTL.

Ocean released a bunch of new games for the Christmas season. *Simpsons: Bart Vs. The Space Mutants* is a quirky mixture of arcade fun and devious puzzles. Can you help Bart rid the planet of Space Mutants? *World Wrestling Foundation* brings wrestling to your computer. Take on the role of Hulk Hogan or a choose from a cast of others in your effort to win the WWF belt. *Terminator 2* is a hand-to-hand combat scenario between the T-800 and T-1000. Motorcycle chases, shoot-outs, and brain teasing puzzles bring all the suspense

DePuzzle

How to create and solve puzzles on your Amiga

by Scott Palmateer



Not too long ago I was at my mother-in-law's house, and she had placed a puzzle on her coffee table. Always up for a challenge, I decided to try it. The puzzle was one of those "peg and hole" puzzles, where you start with a peg in every hole, except one. The object is to jump pegs over one another, removing the "jumped" pegs as you go, and ending up with only one peg left. Well, to make a long story short, I'm no good at puzzles, and several hours of trying to solve this puzzle only served to prove it to me. I decided to write a program on my Amiga that would solve this puzzle. As I was writing the program, it soon became clear to me that there were many puzzles that I had always wanted to solve, and I would have to write a program for each one. That would involve a lot of work that would in large part be duplicated in each program, so I decided to write one general-purpose puzzle-solving program that would solve a variety of puzzles. That way I would only have to write, compile, and test one program, and simply supply the rules in a separate file describing the various puzzles that I wanted to solve. The result of my work is DePuzzle.

Computer and Compiler Requirements

I wrote this program in C, using Lattice C 4.0, but it should compile just fine under any compiler. I hope that my programming style is clear enough that it will allow users who do not like C to translate it to their language of choice. It should work fine on any Amiga—I have a 1MB Amiga 500—although, like everything else, the more memory, the better.

How to Use DePuzzle

Just type in and compile the program contained in listing one and prepare a regular ASCII file that contains the rules for the puzzle that you want to solve. I'll explain this file in a bit. This file can be named anything you want; for the sake of discussion, let's say you've named it "PuzzleRules." From the CLI, type:

```
depuzzle PuzzleRules
```

If all goes well, the program should spit out the list of steps needed to solve the puzzle. If there are too many steps to fit on a single screen, you can type:

```
depuzzle >Answer PuzzleRules
```

DePuzzle will create a file called "Answer" into which it will put the solution. Again, this file can be called anything you want.

I have included three puzzle-description files for three different puzzles to serve as examples. The first puzzle I call the Eunuch puzzle. This puzzle came from an article by Ian Stewart in the "Mathematical Recreations" section of the February 1991 issue of *Scientific American*. The idea behind this puzzle is that a Eunuch has to row a Nymph, a Satyr, and a Cyclops across the river Styx. Only the Eunuch can row the boat, and a maximum of only two creatures can fit in the boat at one time. Also, the Nymph cannot be left alone with either the Cyclops or the Satyr. The rules for this puzzle are contained in Listing 2, and DePuzzle's output is in Listing 3.

The second example puzzle is the Nine-Tile puzzle. This is the familiar puzzle which consists of eight numbered interlocking tiles in a three-by-three square board. The object is to scramble the tiles and then unscramble them. The rules for this puzzle are in Listing 4, and DePuzzle's solution is in Listing 5.

The third example is my mother-in-law's peg puzzle. As I mentioned above, this puzzle consists of a number of holes into which pegs are placed, leaving only one hole empty. The object is to jump pegs over one another, removing the "jumped" pegs, until only one peg is left. There is a great variety of shapes and sizes of these puzzles; my mother-in-law's consists of 21 holes in a roughly triangular pattern. This presents no problem for my program, and adapting the rules to fit any particular peg puzzle should be easy. The rules for this peg puzzle are contained in Listing 6, and DePuzzle's solution is in Listing 7.

The Puzzle-Description File

As I mentioned before, you should only need to type and compile DePuzzle once, no matter what puzzle you use it to solve. However, you do need to prepare a file that describes the puzzle to DePuzzle; what the puzzle looks like, what the rules are, etc. This is where the puzzle-description file comes in.

This file can be prepared with any text editor that can save in ASCII format. Each line of the file is an individual instruction to DePuzzle. There are five types of instructions, and you can also add comments to the file. You can place the instructions in any order, but only one instruction per line is allowed, and the instruction must begin in the first column of every line.

The first instruction, "i=", lets DePuzzle know the initial state of the puzzle. To use this instruction, type "i=" followed by your description of the initial state. To describe your puzzle's initial state, you first have to assign a letter to each position in the puzzle, which means DePuzzle can really only solve puzzles that have at most 26 positions in them. For instance, my mother-in-law's peg puzzle had 21 holes, so I assigned the letters like this:

```
A B
C
D E
F G H
I J K L
M N O P Q R S
T           U
```

Let's say that there's a peg in every hole except for hole G. We'll use an exclamation point to represent a peg because it kind of resembles one, and so our instruction becomes:

```
i=!!!!!!_!!!!!!!!!!!!!!;
```

Each position after the equals sign represents a corresponding position in the puzzle. In other words, the first position represents position A, the second position B, etc. The underscore is a special character that indicates a blank position, or in this case an empty hole.

The nine-tile puzzle is a three-by-three square of tiles, so I assigned the letters like this:

```
A B C
D E F
G H I
```

Unlike the peg puzzle, in which each piece is basically identical, each tile is numbered, so I used numbers to describe the initial state:

```
i=412583_76;
```

This represents an initial state in which tile 4 is in position A, tile 1 is in position B, etc. Position G is currently empty.

The Eunuch puzzle has four different "pieces," the Eunuch, the Nymph, the Cyclops, and the Satyr. I represent each one with the first letter of its name; for instance, the Eunuch is represented by an E; and I use a slash to symbolize the river Styx. The initial state then becomes:

```
i=ENCS/____;
```

Notice that one side of the river has four underscore characters; this allows room for the creatures to take up positions there.

Remember to type your instructions with no spaces, and end each one with a semicolon. You can use any character to represent your pegs, or whatever, but the underscore is reserved to represent blank spaces, so don't use it. There should be only one "i=" instruction per file.

The second instruction is "g=", the goal state instruction. This tells DePuzzle how you want the puzzle to end up. For the peg puzzle, if you wanted the peg to wind up in position G, you'd type:

```
g=_____!_____;
```

Just like in the "i=" instruction, each position after the equals sign represents the corresponding position in the puzzle.

In the nine-tile puzzle, we want the tiles to wind up unscrambled, so the goal instruction becomes:

```
g=12345678_;
```

In the Eunuch puzzle, the creatures are supposed to end up on the other side of the river, so this puzzle's goal state is:

```
g=____ENCS;
```

Again, remember to have only one "g=" statement per file.

The third instruction, "n=", can be used instead of the "g=" instruction, and is meant especially for peg puzzles. It is used for those cases in which you want a specific number of pegs left, and you don't care where they are. For the peg puzzle, you could include the instruction:

```
n=1;
```

This would tell the program that you want one peg left and you don't care where it winds up.

The fourth instruction, "r=", is a little more complicated than "i=" and "g=". It is used to enter individual rules for your puzzle. You can include as many "r=" instructions as are necessary to adequately describe the puzzle's rules. Its syntax is a bit different, too. Unlike the previous three instructions, this one uses three fields, like this:

```
r=<field1>;<field2>;<field3>;
```

Remember to separate each field and to end the line with a semicolon. Basically, this instruction can be read as an "if-then" construction: if the current state of the puzzle meets the criteria contained in <field1>, then apply the instructions contained in <field2> to the puzzle. <field3> is used as an English description of the rule. So, one of the

rules for the peg puzzle would be "if A is blank and C has a peg and E has a peg, then put what was in E into A and put a blank in C and put a blank in E." This represents taking the peg in E and jumping it over C to A, and removing the peg in C. This is how it would be expressed in the file:

```
r=A_C*E*;AeC_E;Jump E over C to A;
```

There are a few new things to explain in the line above. When the program is evaluating the rule against a given state, it looks at the pairs of characters that follow the equal sign as individual criteria. The first pair of characters it sees, "A_" means "if position A is blank." The next pair, "C*", means "if position C is not blank." The asterisk, like the underscore, is a special character; the asterisk indicates a non-blank position. Likewise, "E*" means "if position E is not blank." If all these criteria have been met, then the rule fits for that state, and the program applies the instructions it finds in <field2> to the state.

"Ae" means to take what was in position E and put it into position A. Case is important; the lower-case letter in the second half of the character pair represents the contents of whatever is in that position. In other words, "e" means "whatever is in position E".

As you might expect, "C_" and "E_" cause the program to put blanks in those positions. Note that although both the asterisk and underscore can be used in <field1>, the asterisk is not allowed in <field2>, because the program would not know what you meant if you asked to put a non-blank character in position X!

The third field is an English description of the rule; if this rule is used as part of the solution, then the program will print out this field to help you follow along.

Another way we could have written the rule would be:

```
r=A_C'!E'!;A'!C_E;Jump E over C to A;
```

As I've explained, the program reads in pairs of characters at a time, but if the second character is an apostrophe, it reads one more. This allows you to specify exactly what character you're talking about, instead of simply blank, or non-blank, or referencing another position. In other words, "C'!" from <field1> above means "if position C contains an exclamation point." Likewise, "A'!" from <field2> above places an exclamation point into position A.

The fifth instruction, "w=", is the weighting instruction. It allows you to give the program a bit of intelligence. The program uses an algorithm that allows it to consider many possible paths to the solution at once, and this instruction gives the program some strategy. This instruction lets the program narrow its scope so that it can solve the puzzle faster. You don't absolutely need this instruction in your file, but depending on the puzzle, not including this instruction would mean the program would probably not find the answer in a reasonable amount of time. The syntax is like the "r=" instruction, except that there is only one field. For the peg puzzle above, I have found that a good strategy is to prefer those paths that leave the end holes (A, B, M, T, S, and U) blank. So I include several weighting instructions:

```
w=A_;  
w=B_;  
w=M_;  
w=T_;  
w=S_;  
w=U_;
```

I have found that the program does not find the solution on my 1MB Amiga without these instructions, so including them for this puzzle is critical. Like the "r=" instruction, you can include as many "w=" instructions as you want.

You may be wondering why I didn't type:

```
w=A_B_M_T_S_U_;
```

This is so because there is an implied AND within every "w=" instruction, and an implied OR between "w=" instructions. I want the program to prefer those paths which produce states with blanks in A, OR B, OR M, OR T, OR S, OR U, not A, AND B, AND M, AND T, AND S, AND U. This implied logic is very important for the proper formulation of the "w=" instruction. The same logic holds true for the "r=" instruction.

You can include comments in the file by starting the line with a character other than "i," "g," "n," "r," or "w." For clarity, start each comment line with a semi-colon.

One more thing about the puzzle-description file to remember. You *must* have an "i=" instruction, a "g=" instruction or an "n=" instruction, and at least one "r=" instruction. Weighting instructions are optional, but strongly recommended.

How Does It Work? The A* Algorithm

DePuzzle uses a simple algorithm I learned in a course in Artificial Intelligence (AI) called A*, pronounced "A-star." For those familiar with searching algorithms, it is a variation of depth-first search (DFS).

DFS works by taking an initial state, determining all possible paths to follow, choosing one, without much thought to the choice, and following it to the next state. It repeats the process until 1) it reaches a dead-end, or 2) it reaches the goal state. If it reaches a dead-end, the algorithm backtracks until it can choose a different path, at which point the search continues. DFS is called a "brute-force" method, because it searches all possible paths until a solution is found. If a solution exists for a particular puzzle, DFS is guaranteed to find it, although it may take a very long time. See the *Scientific American* article for a thorough discussion of DFS.

A* takes the same basic approach as DFS, but adds some intelligence to the process of choosing paths. This is where the weighting instruction comes in. The basic algorithm for A* is this:

```
If (initial state is goal condition):  
    Report this and quit;  
Otherwise:  
    Enqueue initial state into queue of untried  
    states;  
    While (goal has not been found AND there are  
    untried states):  
        p = first state in queue of untried  
        states;  
        q = list of successor states to p;  
        If (q is not empty):  
            Put p in list of tried states;  
            For (each state in q):
```

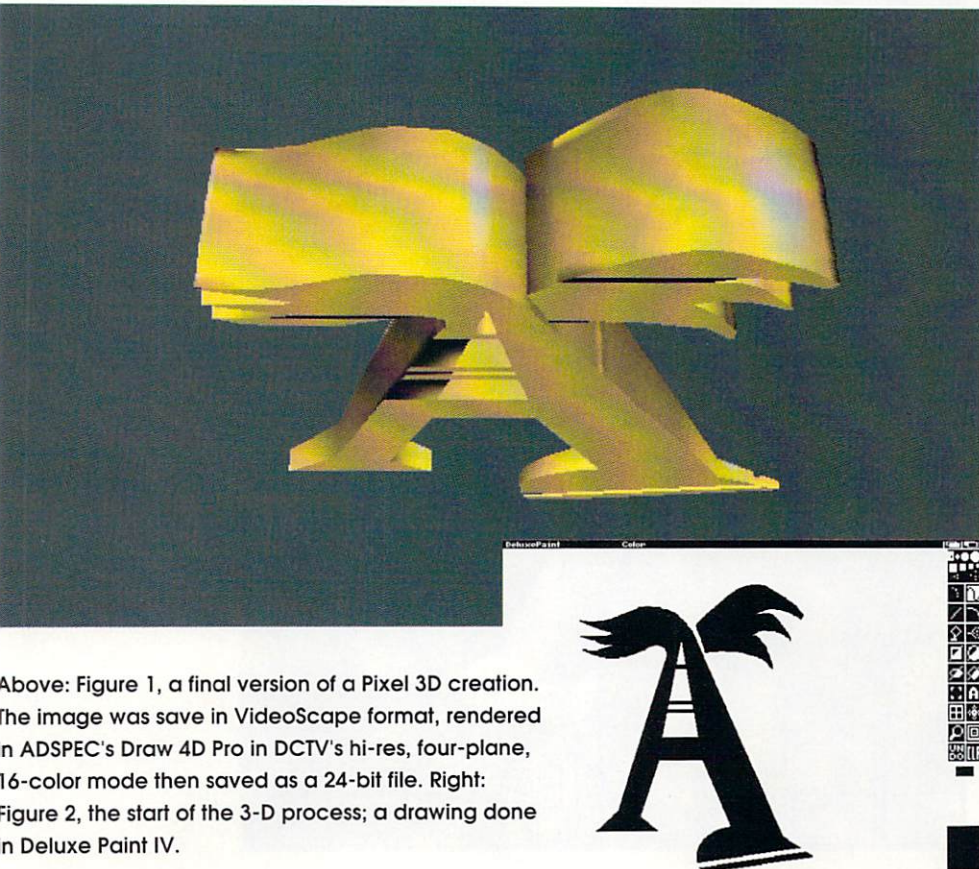
(continued on page 72)

AXIOM SOFTWARE'S

Pixel 3D 2.0

R. Shamms Mortier

THE AMIGA COMMUNITY is a close and observant group, and one of the most pleasurable realities that members notice is the development over time that a piece of software goes through, on its way from "useful" to "essential." The number of packages that make it to the "can't do without" stage are rare. Having purchased and used *Pixel 3D*'s competition over the years, I think *Pixel 3D 2.0* is at the brink of entering the "can't do without" category, which is a very prestigious place to hang out.



Above: Figure 1, a final version of a Pixel 3D creation. The image was save in VideoScape format, rendered in ADSPEC's Draw 4D Pro in DCTV's hi-res, four-plane, 16-color mode then saved as a 24-bit file. Right: Figure 2, the start of the 3-D process; a drawing done in Deluxe Paint IV.

Even in its 1.0 version, *Pixel 3D* was a nice package. It worked fast and intuitively, converting IFF bitmaps to "structured" formats that Amiga 3-D packages could use as a jumping off place for ray-traced imagery. V1.0 was not as option oriented as 2.0 is, allowing neither the breadth of file formats for conversion nor the manipulations now supported. As an example of the class act interface 2.0 contains, look at Figure 4. To begin with, this is all in hi-res and is 3-D button designed. You can see the "Configuration Menu" in the center of the screen. Let's walk through its parameters so that you can get a beginning idea of what is available here.

This menu represents the way you want the program to import IFF bit-mapped data, and you can readily see that there are many options selectable. Though the manual is short, it could use an index to remind you what each of these buttons does.

To begin, the "Conversion Mode" may be set to:

COLOR—wherein the colors of the bitmap are maintained in the 3D object.

MANUAL MODE—which amounts to version of "Bump mapping," that is, reading the Chroma or Color values of the IFF image as indicators of extruded depth.

AUTO DEFINED MODE 1—wherein colors are extruded according to the quantity of separate colors making up the image, and setting both the **EXTRUSION VALUES** and the **INTENSITY RANGE** in the boxes below.

AUTO DEFINED MODE 2—extrusions based upon average color intensities within a "Grid Unit". This option is addressed also by the **GRID UNIT SIZE** function below, as well as **Extrusion Depth** and **Intensity**.

MONO MODE—as it says, ignores color data altogether.

BEVELING: Beveling is a feature that allows really professional 3-D objects to be constructed. In addition to turning it on and off, you can control the "Beveled Inset"—how much the bevel will intrude upon the face of the object—and the "Beveled Depth"—how deep into the extruded object the bevel will go. These parameters can either be input manually or by pressing the plus/minus buttons next to the items mentioned.

SPIN—one of 2.0's greatest new tools, as it allows you to use a standard drawing program, like EA's *DeluxePaint IV*, to generate object primitives that Pixel 3D can import and lathe in order to create 3-D structures for your favorite 3-D Amigaware! The number of "slices," or segments in the rotation, can also be set. Setting the "Degree Value" tells the object where the spin is to start and stop. A "Radius Offset" allows for the displacement of the radial spin, in pixels, as it addresses the object.

LOAD/SAVE Formats

Most of the primary Amiga formats are supported: LightWave, Turbo Silver, Imagine, Sculpt, Videoscape, 3D Professional, and DXF, but there are two glaring omissions that I would like to suggest as additions in the next revision: ADSPEC Programming's *Draw-4D Pro* (though this program does contain a VideoScape converter, and a future upgrade may load .geo files directly), and Activa International's *REAL-3D* (though this program will import Sculpt objects). It might also be nice if it addressed the RENDITION format used by the professional versions of *Caligari*. I would appreciate having the option of saving icons with the files so they could later be moved to alternate storage mediums.

Let's walk visually through a Pixel 3D 2.0 exercise. Figure 2 represents a drawing done in DPaint IV. I used two colors for the sake of simplicity here. Some of this image was constructed with the normal freehand tool in DP IV. I absolutely hate using Bezier curves to draw freehand shapes, so this method obviates that terror. The freehand curves are converted automatically to vector curves by Pixel 3D. The drawing was then saved as a brush for import into Pixel3D. The configurations must be addressed prior to importation. Until or if this is altered in a future revision, I would suggest that you load your object into RAM first, so that you can be free to experiment with different configurations. In order to observe your 3-D sculpture from different vantage points, there are eight buttons surrounding the "DRAW" command button. These allow you to twist, turn, enlarge, and reduce the object in 3-D space so that you know exactly what you're getting before you save it out to disk. The turbo version draws very fast; there are two versions of the software on the disk, and it's easy and fun to try different perspectives.

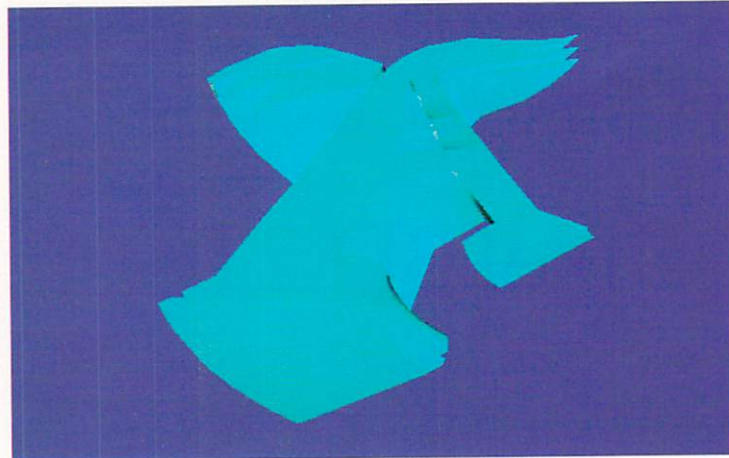


Figure 3:
Another
view of our
final 3-D
image.

Spins?

Yes! Pixel 3D 2.0 can actually be used as a 3D structured drawing program on its own, or as software that makes every attempt to prepare the image for final export-

tation to a more option oriented 3D package. One of the attributes that accentuates its use as a 3D modeler is its ability to take an imported structure and lathe (spin) it on any of the three XYZ axis. Figure 5 shows you the same image we've been using as it looks

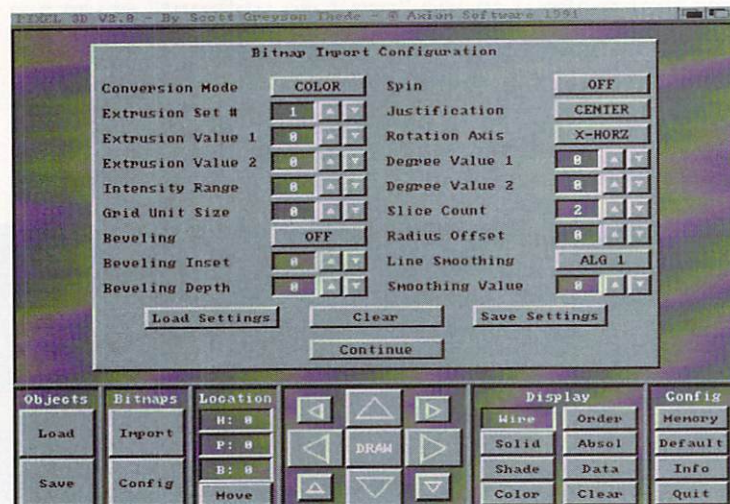


Figure 4:
The super
interface
from Pixel
3D, done in
hi-res with
3-D button
design.



Figure 5:
The original
image
lathed
around the
Y axis.

when lathed around the Y (vertical) axis by 77 degrees. Can you intuit the possibilities here for infinite creation? You could easily use this program along with a normal drawing program to create mega libraries of images for LightWave Toaster applications, with about ten percent of the effort needed when creating them generically in LightWave itself. By the way, the appearance of the shaded images in 16-color hi-res is beautiful in itself. Figures 1 and 3 represent some images saved to disk in the VideoScape format, and rendered in ADSPEC Programming's Draw-4D Pro in DCTV's hi-res, four-plane, 16-color mode as a test, and then saved as a 24-bit file. They have not been sculpturally altered in any way except that surface reflectivity has been addressed and lights have been set.

Conclusion

As stated in the beginning of this article, I am unabashedly in favor of support for this product. It has visibly gone through a mountain of upgrading from version 1.0 to version 2.0. As an Amiga software package, it addresses all of the necessary attributes: it's easy and intuitive to use, has multiple path/format capacity, and its interface design is highly graphical. The manual is short, but contains a host of tutorials. There should be an index included at the back. One word of advice: this software renders so fast that you may forget that your 3-D software is very touchy when it comes to images that contain thousands of polygons, so watch out for creating objects that are extremely large. Future upgrades and versions may address other additional formats and/or tools, but this version has set foot already on the promised land. If you think I'm exaggerating, see it for yourself.

•AC•

Pixel 3D 2.0
Price: \$129.95
Axiom Software
1221 East Center St.
Rochester, MN 55904
(507) 289-8677
Inquiry#201

Please Write to:
R. Shamms Mortier
c/o Amazing Computing
P.O. Box 869
Fall River, MA 02722-0869

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*Tentative price

Fatter Agnus (8372A) 1 MB with FREE Rockwell chip puller (a necessity), "The Final Test" special diagnostic diskette and complete instructions	\$64.95
Multistart II (by DKB) Now switch between 3 ROMs for A500/2000 (a must with 2.0) Keyboard Controlled	\$67.50
Kickboard (by Utilities, Inc.) similar to above but toggle switch activated.	\$33.50
STU (System Test Utility), a terrific diagnostic trouble-shooting package. An absolute must (all Amigas) by Custom Services, Inc.	\$29.95
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bug bytes

by John Steiner

The latest in tips,
workarounds and upgrades

product: Workbench
re: V2.0 upgrade
source: Press release

In case you haven't heard by now, Workbench 2.0 for the A2000 and A500 have been released. The ROM upgrade should be available at your local Amiga dealer through their service department. The upgrade consists of a manual update, floppy disks and ROMs. The suggested retail price for the 2.0 Enhancer kit is \$99, plus installation. The price for installation will vary depending upon local market labor rates for computer service in your part of the country. If you have an A2620 or A2630 board, standard equipment in A2500 systems, you will also need a ROM set for that board as well. Those ROMs will cost an additional \$30 to \$40. If you have a late model A2500, it is possible you might not need these ROMs, so be sure to check with your dealer's service department before you order them. ROMs for A3000 systems should be available by the time you read this; however, as this

is being written, they are not yet shipping. A3000 Enhancer kits have a suggested retail of \$45 plus installation.

product: CBM A2091
controller card
re: Device lockup
source: Reader mail

From this month's mailbag I received a letter written by Todd Olson of Waikoloa, HI. He owns an Amiga system with a Commodore A2091 controller card. He has run into the same problem that was mentioned in the September 1991 Bug Bytes

with device lockup when using both the SCSI hard disk and tape drive he owns. He has contacted his local Amiga dealer and another dealer on the mainland in an attempt to get the version 6.2 ROMs which would correct his problem. In short, he has been unsuccessful. Even Commodore Express service people were not able to give him satisfactory answers. He has resorted to purchasing a GVP controller so that he might use the tape drive he purchased. He asks, "How does a business with large storage needs go about using a A2091 controlled Amiga? Do they get

a 700MB hard drive as I have, and back it up to floppies?" I contacted our local Amiga dealer in Fargo and asked about shipment of the V6.2 ROMs that Mr. Olson requires. The service manager told me that the parts have been available from Commodore since sometime in September, and he has ordered and replaced two sets under warranty for customers in the Fargo area. They should be available directly to any Amiga authorized service center through Commodore parts.

product: ATOnce
re: Memory management
source: Reader mail

Mike Squires writes via his APO in New York about the ATOnce board. He comments that his mouse driver works properly using the mouse driver that came with his version MS-DOS 3.2. He does not mention any more than that on the specifics of his version 3.2 DOS, however. MS-DOS is not as standard as many people are led to believe, as many companies who manufacture PC compatibles have Microsoft make "minor adjustments" in the software to support specific features of their particular CPU design. As a result, there are compatibility differences that crop up regularly when trying to use a version of MS-DOS from one compatible machine on another computer. Utilities such as mouse drivers are typically prone to these problems, and it would appear Mr. Squires has found a DOS which functions well with the ATOnce. He is having one problem relating to memory management when running under memory models 2 or 3. Under those conditions, he cannot access more than 640K of his available 2.5MB system under MS-DOS. He is running

In case you haven't
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an ADRAM 540 populated to 2MB on his A500. He wonders if anyone has figured out how to access more than the 640K. He also writes "The ATOnce gets an 'A' for performance. When the VGA color update is out...it will get an 'A+'."

product: A2620
re: Workaround with SetCPU
source: Reader mail

Dr. Larry Keller of Cleveland State U. in Ohio writes to respond to my comments about the Disk Company's release of *MaxiPlan*. He uses MaxiPlan III for calculating his students' grades and personal business. "Both uses demand considerable power and MaxiPlan delivers. The program is quite stable and I get great output with a Brother typewriter with its computer interface." He comments that MaxiPlan III does not, however, work properly under Workbench 2.0. The program will draw a chart, for example, but locks up as soon as it is displayed.

MaxiPlan Plus 2.0 works well under 2.0 but it lacks some of the features of MaxiPlan III. "The Disc Company," Dr. Keller continues, "has been most gracious in their upgrading policies. Michael Rivera, Manager of Customer Relations, promptly answered my inquiries about upgrading and when I shipped in my last PlanIT program disk I very quickly received MaxiPlan Plus 2.0 for \$50... I do hope the Disc Company can continue to develop the product because their documentation is excellent as is their customer response, and MaxiPlan IV would be a welcome addition to the business grade software for the Amiga."

MaxiPlan Plus 2.0
works well
under 2.0
but lacks some
of the features
of
MaxiPlan III.

Dr. Keller also comments on using SetCPU with his A2620 accelerator board. He recently upgraded the board with two additional megabytes of 32-bit RAM only to discover that his system would crash before completing the startup-sequence. He traced the problem to SetCPU. "I have placed the 'fastrom' option of SetCPU in my Startup-Sequence. The program places a 32-bit image of the ROM chip into memory. My programs work up to 30% quicker with the 32-bit ROM image and I was hoping I could retain it. ...According to Dave Haynie, [author of SetCPU], some of the A2620 boards do not behave well and thus the additional

2MB of memory is not compatible with placing the ROM image there. SetCPU loads the image into the upper memory by default which means it will be placed in the new memory. To avoid this, Haynie provided the 'head' option which locates the ROM image in the lower 32-bit memory. Once I change my SetCPU command to include the 'head' option, all worked well."

Dr. Keller also commented in passing that he is using Superbase Professional version 4.01 and finds that the biggest difference is a much smaller program file. He complimented Precision on their excellent examples disk, which contains

According to
Dave Haynie,
some of the
A2620 boards
do not behave
well.

some especially creative forms for data entry and retrieval.

products: GVP accelerator, HP LaserJet, PageStream
re: Incompatibility problems
source: Reader mail

James Romick of New York, NY, writes to report a problem he is having with Pagestream 2.1, a GVP accelerator and HP LaserJet II. He comments in part:

"I have recently added a GVP SeriesII 68030 33mhz accelerator card to my A2000. One purpose was to make Pagestream run faster... I also have an HP LaserJet IIP printer with 2+ MB RAM. When I print a document from Pagestream (either by using the HPLaser.Printer or the Preferences.printer) I get my document, but with some extra characters. I have also made multiple copies of the same document. The extra characters are there, sometimes the same, sometimes different, but never in the same place on the page. Where are they coming from? When I called SoftLogic technical support, the person to whom I spoke asked me if I was running the program from an accelerated machine and had the documents printed OK before. I answered 'yes' to both questions. He said that it was a hardware problem and cited CBM, GVP and HP as being incompatible and unwilling to make necessary corrections. He also told me that S-L would be sending Pagestream 2.2 updates to registered users free of charge when they became available. I discussed my problem with several Amiga dealers/users. They told me that it sounded like a software problem. Now I don't particularly care whose fault it may be.

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I like PageStream, I like my HP LaserJet IIP, I like my GVP accelerator board, and I love my Amiga 2000. I just want them all to get along together."

I contacted Kevin Davidson via Portal as Kevin moderates a Soft-Logik support group on the network. His comments are as follows:

"There was a discussion on the Soft-Logik BBS about problems with the GVP and HP, but I think it was related not to PageStream, but the Amiga in general. In fact, there was a Printer driver posted on the Soft-Logik BBS which is supposed to 'slow down' output to the HP printer for use with accelerated Amigas. On October 9, Soft-Logik tech support released a special version of the HP Laserjet driver for PageStream. It is described as: 'Slow version of HPLaser—use with accelerators.' The driver can be downloaded from the [Soft-Logik] BBS and it's here on Portal too. The filename [on the BBS] is HPSLOW.PRT and here it will be HPSLOW.LZH."

Also this month, I received a press release from Designing Minds software. They are announcing an upgrade of *Home Front* to version 2.0. *Home Front* is a complete home

management system for the Amiga. New features of version 2.0 include check printing, more accounts and categories, a new graphical interface, automatic transactions and backup facilities, data export, graph printing. Its "Click-n-Go" hard disk install will easily install the upgrade under either Workbench 1.3 or 2.0. Registered owners of previous versions of *Home Front* may send their original disks with an \$18 cashier's check or money order to:

Designing Minds Software
Attn: Product Upgrade Dept.
3006 North Main
Logan, UT 84321
(801) 752-2501

product: Professional Page
re: Upgrade
source: Press release

If you haven't registered your *Professional Page* software, you should do so immediately, according to a spokesperson from Gold Disk. They have shipped version 2.1 to all registered users of version 2.0

at no additional charge. The update provides several enhancements including interactive help, BULLET fonts (scalable type), and landscape printing on non-postscript printers. Offset control adds precision page positioning on any printer supported by Preferences. Owners of versions 1.3 Professional Page can upgrade to 2.1 for only \$75. The fee for upgrading from earlier versions is \$100. Call Gold Disk for details on these upgrades.

Gold Disk
20675 South Western Ave.,
Suite 120
Torrance, CA 90501
(213) 320-5080
(213) 320-0298

product: The Art Department Professional
re: Upgrade
source: Press release

ASDG has announced the release of *The Art Department Professional* version 2.0. Registered users of Art Department Professional have been notified by mail about the upgrade. Users who purchased

the earlier version of Art Department Professional in September 1991 or later can purchase the upgrade for only \$30. Other users can upgrade for \$75. Both prices include shipping and handling. Users of the original Art Department can also upgrade to Art Department Professional version 2.0 for \$140. Some of the additional features include support for JPEG compression format files, BMP format for Windows 3.0, and QRT for ray tracing. ASDG has also added direct support for high resolution display devices such as Commodore's A2410, GVP's GVP24, ACS's *Harlequin*, Black Belt System's *HAM-E*, Mimetics *Framebuffer*, Digital Creations' *DCTV* and Impulse's *Firecracker 24*. New operators include convolve/sharpen, antialiased text, and print to either Preferences or Postscript printers.

ASDG, Inc.
925 Stewart St.
Madison, WI 53713
(608) 273-6585

That's all for this month. If you have any workarounds or bugs to report, or if you know of any upgrades to commercial software, you may notify me by writing to:

John Steiner
c/o Amazing Computing
Box 869
Fall River, MA 02722

...or leave EMail to:
John Steiner on Portal
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and excitement that the movie offers. *Hudson Hawk* is a humorous, cartoon-style game which mixes wit with action. *Robocop 3* is a fast 3-D polygon game which features a car chase, alleyway shoot-outs, close combat with robot ninjas, and jet pack flying missions. *Smash TV* is based on *Beserk*, an old coin-op arcade game from the early 1980's. The objective is to survive and thrust into increasingly more dangerous arenas as you blow away deadly humanoids. In *SimEarth*, control at-

mospheric composition, lifeform creation and evolution, plantlife generation, and more. *EPIC* is comprised of a number of missions. This 3-D space adventure creates a milestone in polygon technology in terms of speed, graphical detail, and playability. *ELF* features devious puzzles, all wrapped together in a fantasy world or characters.

New Media released *The Independent European Soccer CDTV Disc 1990-91*. It provides a comprehensive guide to the year's

soccer season for clubs, leagues, tournaments, and European Soccer Disc. Soccer fans will be able to compare statistical data of their club, players, and results. New Media also showed another disc for CDTV, *The Guinness CDTV Disc of Records*.

Psygnosis officially debuted *Barbarian II*, a sequel to *Barbarian I*. The evil Necron is back in town and wants revenge. It's up to you, Hegor the Barbarian, to find the courage and strength to face the challenge.

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(031) 557-4242
Inquiry#262

Adept Development
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1000 Lausanne 5
Switzerland
4121-312-1202
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Swanfast Computers displayed *Learn French with Asterix* for CDTV (£29.99). There are over 60 minutes of spoken French from 30 characters, 400 color cartoon drawings, over 1500 vocabulary items, and a complete English translation of the text.

Team17 is one of the newest names on the Amiga software scene. "Full Contact," a budget game, was its first release, followed by "Alien Breed." Soon to be released is "Project X" (£24.99), a classic style shoot-em up having 50 frames/sec. background scrolling.

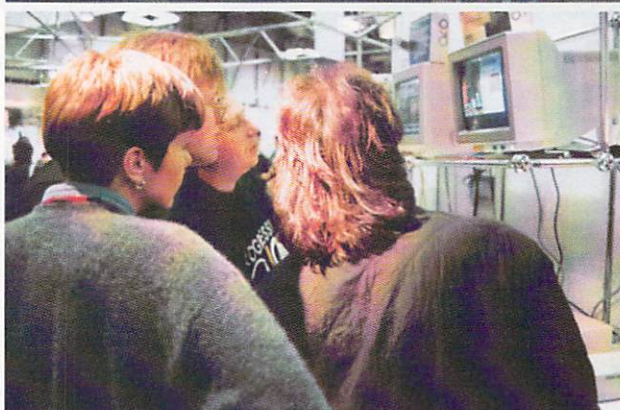
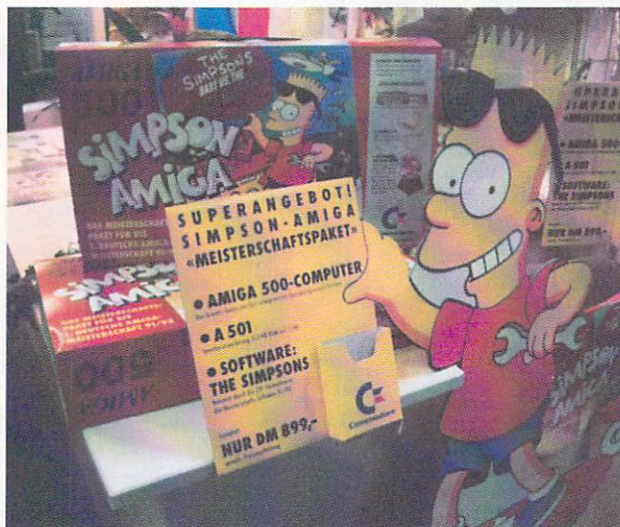
Trojan has released their own lightpen and Lightphaser (£39.99) for use on the Amiga. Although similar to a version of the light gun distributed by ActionWare, Trojan has released the programming code to public domain. This will allow other software publishers to provide games which will use the devices. Trojan has already provided several titles to use the Lightphaser such as the futuristic space-combat game *Cyber Assault* (£24.95) as well as *The Enforcer* (£9.99), *Alien* (£9.99), and *Firestar* (£9.99).

For the games players, UBISoft provides "Battle Isle," an air/land/sea strategy war game, and "Celtic Legends," another strategy game that takes you into the mysterious, mystical past.

Virgin Games released a number of new games including *Space Shuttle*, *The Simulator* (£44.99). Shuttle is the most comprehensive simulation of NASA's Space Shuttle Orbiter ever produced for a home computer. Featuring 3-D graphics that allow the orbiter and its environment to be viewed from any angle at any time. Choose from a number of missions: Deploy and repair satellites, launch spy satellites, maneuver the craft in zero gravity, and more. The Magnetic Scrolls Collection: Volume 1 (£30.99) includes three games in one package. In *Fish*, assume the role of a goldfish and battle against the Seven Deadly Fins, an inter-dimensional group of anarchists. *Corruption* is a fast-paced thriller that takes place in a wheeling and dealing city. Enter a battle of wills where your only weapons are communication and information. In *The Guild of Thieves*, rob the Kerovnian Bank and loot treasure from a castle and a village to prove your worth. *Floor 13* (£29.99) is a game in which you control an elected government and try to keep its popularity. There is no "fair play"; use any means necessary to ensure your government's existence. Assassination, interrogation, and infiltration are just three of your possible tools. *Conan The Cimmerian* (£29.99) is seeking to avenge the death of his family and friends. His aim is to enter the Temple of Skulls and defeat Thoth Amon, but he must battle spiders, lizard-rats,

Top: Bart Simpson is a prime salesperson for the Amiga 500 in both Germany and the UK.

Below: Steve Spring of Progressive Peripherals keeps the attendees entertained with Progressive's newest 040 accelerators.



guards, assassins, and a number of other rogues along the way. Other options allow switching between arcade and role-playing combat and the ability to vary the hostility of opponents. In Jimmy White's *Whitwind Snooker* (£29.99), the player can recreate every aspect of real-life snooker. Put swerve or spin on the cue ball, chalk the cue, view the table from any angle, and choose from four skill levels. A table editor allows practice of trick shots, too. *Realms* (£29.99) is based in a living playfield that offers five different terrains and up to 16 computer-controlled players. Travelling over 125,000 square miles of fractal landscape, fight for control of over 30 cities that struggle to dominate an entire fantasy world. *Rolling Ronny* (£24.99) is the coolest dude in town and he's picking up stolen jewels as she skates through town. On the side of law and order, complete all nine levels before the timer ticks to zero. Ronny can also pick up health, time, and energy and other crazy power-ups along the way. In *Spot* (£19.99), dominate the spot board by getting more of your counters in the squares than any other player. The game features a point-and-click user interface, allows up to four players

to play, and offers nine skill levels. *Vengeance of Excalibur* (£29.99) is the sequel to the fantasy role-playing adventure, *Spirit of Excalibur*. Roam at will across the vast map of hazardous and mysterious landscape. An icon-based interface allows the player to check character status, zoom to scene level or the map, and issue movement commands to your parties. *Spirit of Excalibur* for CDTV was also announced. It features 2.5MB of dazzling graphics, audio, speech, and music. Strategically plan for combat simulation and move your troops to destroy or delay invaders while knights complete their quests. Test your own skills as a swordsman or magic user. *North Polar Expedition* for CDTV (£34.99) is an educational role-playing game. This game tests the user's aptitude for survival, incorporating calculations, ecological data, social interaction, and geographical knowledge. *Musicolor* for CDTV (£34.99) teaches how to read and compose music, based upon the teaching methods of Candida Tobin. Learn the elements of rhythm, pitch, and harmony while you write you own music.



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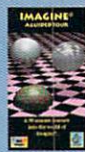
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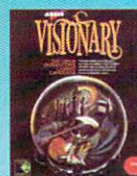


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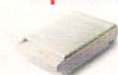
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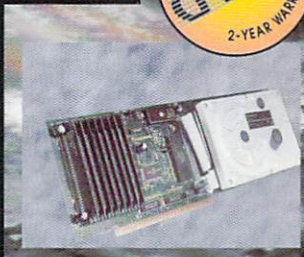


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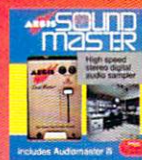
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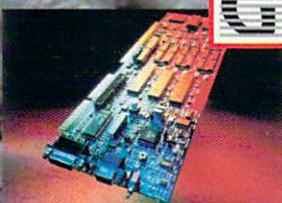
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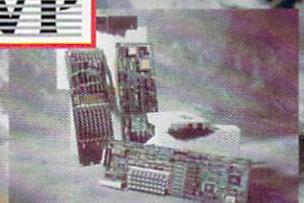
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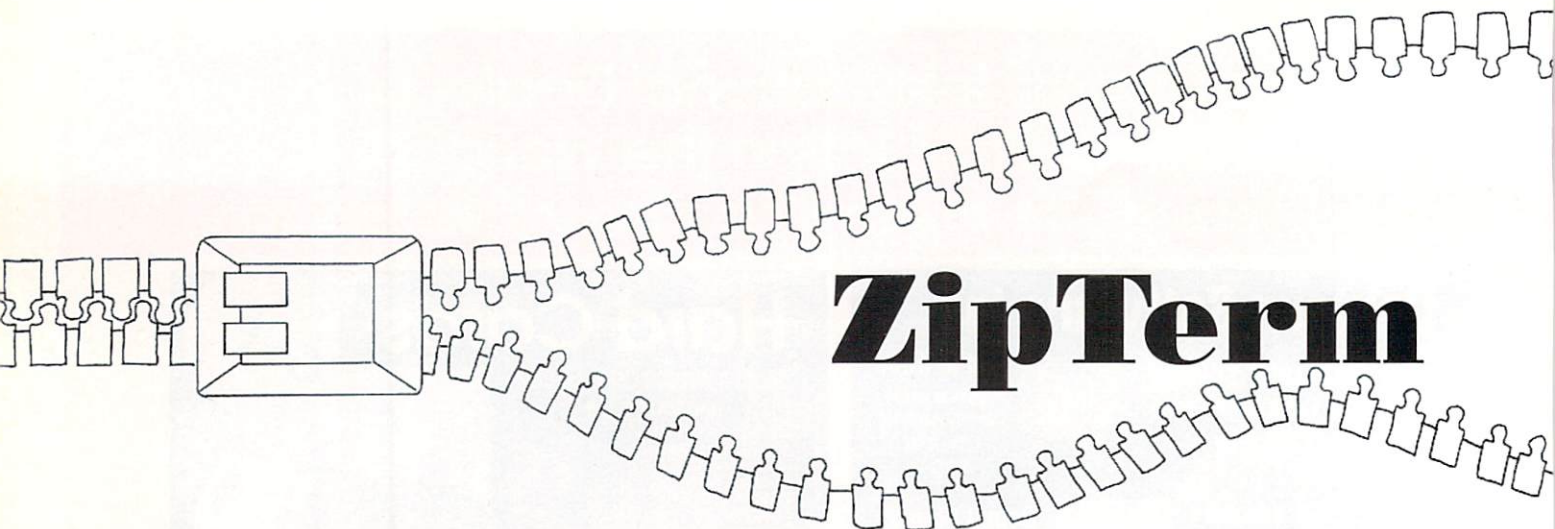
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ZipTerm

A Demonstration of Console.device and Serial.device

by Doug Thain

Because engaging in telecommunications has become so popular in the microcomputer world, one of the first programs a new programmer attempts to write is a terminal program. However, one of the most confusing topics for the new Amiga programmer to learn is device I/O. So let's jump right in and learn how to use Amiga devices while creating a useful utility. This article is for those of you who already know ANSI C, but were stumped when attempting to use ANSI for the serial device. You probably tried to open("SER:", "rw"), right? This article is also for those of you who opened up your ROM Kernal Manual, looked up "serial.device," and scratched your head at all the cryptic examples.

In the Amiga operating system, a device is not necessarily a physical object, such as a modem. A device is a set of routines that allow programs to interact in a consistent way with the underlying system—whether it be a disk drive, a window console, or memory set aside for holding clips. Amiga devices are files that are stored in Kickstart memory or on your system disk, in the DEVS: volume. Where the device file is stored really doesn't matter. Usually, the devices in Kickstart are the most commonly-used devices, while the disk devices are newer ones that may need to be changed or updated. Some examples of devices are:

trackdisk.device	Kickstart	controls all 3.5" floppy drives
serial.device	Disk	controls the serial port
clipboard.device	Disk	memory manager for clips
console.device	Kickstart	manages text consoles on windows

The two devices we will be concentrating on are the serial device and the console device. The serial device, you guessed it, controls I/O through the serial port and allows for asynchronous communications. A device is asynchronous when it can carry on I/O by itself after the CPU has instructed it what to do. The console device falls into our more recent definition of device and allows for easy input and output through a window—the CLI uses a console device. The console device displays a cursor, controls scrolling of the window, and other similar functions.

Device usage has three main components: request blocks, device I/O functions, and message ports. Requests are extensions of messages which contain pointers to data to be manipulated, device commands, and other information pertinent to the device itself. Device I/O functions are used to transfer request blocks along message ports in several different ways. Message ports, in this instance, are used to pass request blocks between a program and a device. Let's take a look at these three components.

Request Blocks

Request blocks come in two different flavors: standard and extended. The standard request block struct `IOStdReq` is general purpose and can be used for any device to transmit one of several basic commands along with an ASCII string. Each device also has its own extended request block structure to transmit information that is not applicable to all devices. In the case of the serial device, the extended form is struct `IOExtSer`. The first field of an extended request block is a standard block. However, we only require the use of one other field in this extended block (`io_SerFlags`) and will concentrate on the use of the standard request block. Let's look closely at the important fields in this structure, found in "INCLUDE:exec/io.h":

```
struct IOStdReq {
    struct Message io_Message;
    struct Device *io_Device;
    struct Unit *io_Unit;
    UWORD io_Command;
    UBYTE io_Flags;
    BYTE io_Error;
    ULONG io_Actual;
    ULONG io_Length;
    APTR io_Data;
    ULONG io_Offset;
};
```

`io_Message`, `*io_Device`, and `*io_Unit`

These fields are reserved for the system. The `io_Message` field is a standard header which the `MsgPort` uses. `*io_Device` and `*io_Unit` are supplied by `OpenDevice()` and contain system information about the device. These three fields are sensitive and should not be modified. (Exception: see below about `OpenDevice` on a console device.)

`io_Command`

This field tells the device just what to do with your data (if any) and should be filled with one of several standard commands: `CMD_READ`, `CMD_WRITE`, `CMD_CLEAR`, `CMD_BREAK`, `CMD_START`, and `CMD_STOP` are the most common. This field is the most important and should always be filled before sending any request block.

`io_Error`

It is a good idea to check this field during important I/O operations—a non-zero value signifies an error has occurred. Exactly what happened is defined in the include file pertinent to that device. For our purposes, if an error occurs after everything has successfully opened, it is beyond the reach of the program.

`io_Data`

This field is the next most important and usually contains a pointer to an ASCII string, although it can point to other data when a particular device requires it. For outgoing data, it will point to a filled buffer. For incoming data, it *must* point to an already allocated buffer; the device will not manage memory for you!

`io_Length`, `io_Actual`

`io_Length` needs to contain the length of the string whenever data is sent out. Without it, the device could receive long lines of garbage, or nothing at all. An `io_Length` of -1 signifies a NULL terminated string. `io_Length` must also contain the desired length of data whenever a read is performed. Make sure you always allocate a buffer as large as `io_Length`. `io_Actual` contains the length of data actually read. Sometimes less comes in than what you may want.

Device I/O Functions

Once our devices are opened up and our request blocks are ready to be sent, we let the device I/O functions do the actual work for us. The five basic I/O functions are `AbortIO()`, `CheckIO()`, `DoIO()`, `SendIO()`, and `WaitIO()`. All of them take only one argument—a pointer to a prepared request block.

`DoIO()`

This function is the easiest—it takes the request block, sends it off to the device, and waits for the action to complete. This usually returns quickly on writes, apart from hardware problems. However, if a read is performed with `DoIO()`, and incoming data never arrives, your task could be held forever!

`SendIO()`

This function also sends a prepared request block off to a device but doesn't wait for it to complete. This gives lots of flexibility when reading, because a program can be doing other things while a device sits and waits for input. When the I/O is completed, we can check for it in one of two ways—looking at the associated message port for an arriving message, or by using `CheckIO()`.

`CheckIO()`

This function checks to see whether a request block sent using `SendIO()` has arrived back yet. If so, it will return the address of the request. If not, it will return NULL. IMPORTANT: This function checks only to see if the block has returned. You still must use `WaitIO()` or `AbortIO()` to let the system know you have received it—only then may you examine the request block.

`WaitIO()`

This function will wait for a message block sent using `SendIO()` to return. Users of this must heed the same warning as `DoIO()`; it could hold your task forever. However, if `CheckIO()` returned true, this function will return immediately, letting the system know you received the request back. Only then is it safe to examine the request block.

`AbortIO()`

This function will immediately cancel the pending request, whether returned or not. If this function is used after `CheckIO()` returned true, the request block will not contain valid data. The main use of this function is to cancel I/O before a program exits.

Message Ports

The device functions pass request blocks along the message port associated with each request. Ideally, when using device functions, we should never have to do more than create and delete the message ports. However, we can't use `WaitIO()` or even `WaitPort()` in this case. We must use the generic `Wait()`, because we have three separate ports to watch. `Wait()` uses this cryptic method: logical OR the patterns of each port's signal bit with each other. Confused? It's actually pretty simple whether you understand the concept or not. Here's what it looks like:

```
Wait( 1 << port1 -> mp_SigBit |
1 << port2 -> mp_SigBit |
/* and so on... */
1 << portn -> mp_SigBit );
```

This function will hold the task until one of the ports has a message arriving at it. In theory, we could just use an endless `for(;;)` loop that performs `CheckIO()` on each device until one message arrives, but this eats up CPU time for nothing; don't "gronk the system" in a multitasking environment.

Opening the Doors

OK, now that we understand this slew of information, let's try to open up a device and actually use it. Here are the steps to using a device:

- 1) Create a Message Port
- 2) Create a Request Block
- 3) Initialize Request Block
- 4) `OpenDevice()`
- 5) Perform I/O
- 6) `AbortIO()` if necessary
- 7) `CloseDevice()`
- 8) Delete Request Block
- 9) Delete Message Port

We create a port for a device using `CreatePort(name, priority)`. In this case, it requires no name because it is never made public for other tasks to look up. Its priority can remain at 0 unless important high speed transfer has to take place. This is how it is done:

```
struct Window *w; /* already opened */
struct MsgPort *port;
struct IOStdReq *req;

port = CreatePort(0,0);
if(port==NULL) puts("Couldn't create new port!");
```

To create a standard request block, we use `CreateStdIO(port)`. This sets up a request block to travel along only the port it was initialized with. For an extended request block, we use `CreateExtIO(port, size)`, where the size of the request block is specified; this is necessary for the serial device, because we must set up one field that is special to the serial device. Here's an example:

```
req = CreateStdIO(port);
if(req==NULL) puts("Couldn't create request block!");
```

For many devices, now is the time to provide special information on what mode the device must be opened in. The console device needs a pointer to the window it is to operate in, and the serial device needs to know whether it is to be shared or exclusive along with other information. The example will be the console device.

```
req -> io_Data = (APTR) w;
req -> io_Length = sizeof(*w);
```

And finally, to open the device, we call `OpenDevice(devicename, unitnumber, request, flags)`. Notice that in the program, the console unit is not opened twice; we initialize the two message blocks to point to the same device. This is the only method where it is legal to tamper with the `io_Device` and `io_Unit` fields; it is not guaranteed to be safe for all devices.

```
int error;
error = OpenDevice("console.device",0,req,0);
if(error) printf("console error %d\n",error);
```

OK, now that we have this device open, let's play with it before we close it. To just send a string out to this particular console:

```
req -> io_Command = CMD_WRITE;
req -> io_Data = (APTR) "Hi there!\n";
req -> io_Length = strlen(req->io_Data);
DoIO(req);
```

Now, to just sit and wait for one character:

```
char buffer;
req -> io_Command = CMD_READ;
req -> io_Data = (APTR) &buffer;
req -> io_Length = 1;
DoIO(req);
```

The received key would be in the variable `<buffer>`.

Notice that, in the extended request for the serial device, the first field (`IOSer`) is the standard request. So, technically, the following code is incorrect because `io_Command` is not a field of `IOExtSer`:

```
struct IOExtSer *req;
req -> io_Command = CMD_READ;
```

This particular code works because `io_Command` is still in the same position as if it were part of an `IOStdReq`. However, the correct form for setting these fields in an `IOExtSer` is:

```
struct IOExtSer *req;
req -> IOSer.io_Command = CMD_READ;
req -> IOSer.io_Data = (APTR) "test";
req -> IOSer.io_Length = 4;
DoIO(req);
```

Using the console again, let's say you want to display one message over and over until the user hits a key. `SendIO()` and

CheckIO() come in handy here. Two requesters will be used here, as in the program.

```
char buffer;
struct IOStdReq *rreq, *wreq;
rreq -> io_Command = CMD_READ;
rreq -> io_Data = (APTR) &buffer;
rreq -> io_Length = 1;
SendIO(rreq);
wreq -> io_Command = CMD_WRITE;
wreq -> io_Data = (APTR) "Hit a key!";
wreq -> io_Length = 10;
while(!CheckIO(rreq)) DoIO(wreq);
```

Notice that it is OK in this instance to have a CheckIO() loop because the loop is actually doing something. What has to be avoided is while(!CheckIO(rreq));.

Now that we're done with our activity, let's close everything down. Is it possible that there is still a pending I/O request? No, we don't need to AbortIO(). The following is pretty self explanatory:

```
CloseDevice(req);
DeleteStdIO(req);
DeletePort(port);
exit(0);
```

Compiling ZipTerm

This program was created and compiled under Manx Aztec C 3.6a. All the code is fairly orthodox and should provide no problem for other compilers. Compile with integers defaulting to 32-bit long:

```
cc +l term.c
Link with the standard library:
ln term.o -lc
```

And there it is—a small terminal program, very small, in fact, only 6012 bytes executable. So what use is it? Well, if you're like me, the best terminal is the smallest one—one that takes up very little memory so that you can still do all sorts of other things at the same time. That's the beauty of multitasking, right? Of course, if you need transfers and phone books, this isn't the way to go.

This little gem does have one frill: it supports Amiga-style ANSI! The console device itself implements this, and supports colors, typstyles, and cursor movements. Unfortunately, like many Amiga terminals, screen clear doesn't work quite right with IBM-flavored bulletin boards. Does anyone know if this a problem of Amiga's or IBM's?

You can expand upon this version to create a souped-up terminal program. Add menus and gadgets if you like. The console device in itself is very versatile and powerful. Maybe a font-changing capability would be neat. Most of all, make sure to have fun!



Listing: term.c

```
/* term.c
   ZipTerm v0.0 by Doug Thain

   UUCP: {decvax|att}{harvard|rutgers|ucbvax}|uwvax!
         astroatc!nicmad!madnix!cknight

   Record setting small terminal program - 6012 bytes
   executable using Manx Aztec 3.6a. Should be fine
   for all compilers. Compile using long ints:
       cc +l term.c
       ln term.o -lc
   Opens a borderless console window on WB screen - no
   arguments.
*/

#define AZTEC_C

#include <intuition/intuition.h>
#include <devices/serial.h>
#include <devices/console.h>

long      OpenDevice();
struct MsgPort *CreatePort();
struct IOStdReq *CreateStdIO();
void      *CreateExtIO();
struct Library *OpenLibrary();
struct Window *OpenWindow();
struct Message *GetMsg();

struct NewWindow NewWindow = {
    /* left,top,height,width,detailpen,blockpen */
    0,50,640,100,0,1,
    /* IDCMP flags */
    CLOSEWINDOW,
    /* window flags */
    WINDOWCLOSE|ACTIVATE|NOCAREREFRESH|SMART_REFRESH|
    WINDOWSIZEING|WINDOWDRAG|WINDOWDEPTH|BORDERLESS|
    SIZEBOTTOM,
    /* gadgets,check,title,screen,bitmap,min w,h,max w,h */
    NULL,NULL,(UBYTE *) "ZipTerm v0.0",NULL,NULL,64,20,1280,800,
    /* screen type */
    WBENCHSCREEN
};

/* we don't care about the content of IntuitionBase or
   IntuiMessages, so we'll just use a generic pointer
   for both. These variables are all initialized to zero
   because of the method used in closedown() */

void *IntuitionBase=NULL,*msg=NULL;
struct Window *w=NULL;
struct MsgPort *rserport=NULL,*wserport=NULL;
struct MsgPort *rconport=NULL,*wconport=NULL;
struct MsgPort *wport;
struct IOExtSer *rser=NULL,*wser=NULL;
struct IOStdReq *rcon=NULL,*wcon=NULL;

/* clarification:
   wser/rser - write serial/read serial
   wcon/rcon - write console/read console
   rconport - read console port
   wport - window port
   etc.
*/

void closedown(error)
{
```


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```

if(rcon!=NULL) {
    CloseDevice(rcon);
    DeleteStdIO(rcon);
    DeleteStdIO(wcon);
}

if(rconport!=NULL) DeletePort(rconport);
if(wconport!=NULL) DeletePort(wconport);

if(rser!=NULL) {
    CloseDevice(rser);
    DeleteExtIO(rser);
}

if(rserport!=NULL) DeletePort(rserport);

if(wser!=NULL) {
    CloseDevice(wser);
    DeleteExtIO(wser);
}

if(wserport!=NULL) DeletePort(wserport);

if(w!=NULL) CloseWindow(w);
if(IntuitionBase!=NULL) CloseLibrary(IntuitionBase);

if(error==20) puts("Out of memory.");
if(error==25) puts("Serial device problems.");
if(error==26) puts("Console device problems.");
if(error==30) puts("Intuition library problems.");
exit(error);
}

void openup()
{
    int err;

    IntuitionBase = OpenLibrary ("intuition.library",0);
    if(IntuitionBase==NULL) closedown(30);

    w = OpenWindow(&NewWindow);
    if(w==NULL) closedown(20);
    wport = w -> UserPort;

    /* Set up ports and message blocks for console.device -

```

we need two sets because we want to queue reads and perform writes at the same time */

```

wconport = CreatePort(0,0);
if(wconport==NULL) closedown(20);
wcon=CreateStdIO(wconport);
if(wcon==NULL) closedown(20);

rconport = CreatePort(0,0);
if(rconport==NULL) closedown(20);
rcon = CreateStdIO(rconport);
if(rcon==NULL) closedown(20);

/* pass it the window pointer, and open up the write
console */

wcon -> io_Data = (APTR) w;
wcon -> io_Length = sizeof(*w);
err = OpenDevice("console.device",0,wcon,0);
if(err) closedown(26);

/* copy into the read block
(two sets of I/O information, but one device) */

rcon -> io_Device = wcon -> io_Device;
rcon -> io_Unit = wcon -> io_Unit;

/* Ok, now to open up serial.device:
Here, we also need two sets of blocks because we
need to queue reads and writes at the same time, but
the serial device has a shared mode, so we will go
ahead and OpenDevice twice to be safe.
*/

rserport = CreatePort(0,0);
if(rserport==NULL) closedown(20);
rser = CreateExtIO(rserport,sizeof(struct IOExtSer));
if(rser==NULL) closedown(20);
rser->io_SerFlags = SERF_EOFMODE | SERF_SHARED;
err = OpenDevice(SERIALNAME,0,rser,0);
if(err) closedown(25);

wserport = CreatePort(0,0);
if(wserport==NULL) closedown(20);
wser = CreateExtIO(wserport,sizeof(struct IOExtSer));
if(wser==NULL) closedown(20);
wser->io_SerFlags = SERF_EOFMODE | SERF_SHARED;
err = OpenDevice(SERIALNAME,0,wser,0);
if(err) closedown(25);

/* Here, you might want to set up some initializing
info (such as baud and parity) using SDCMD_SETPARAMS,
but we will let Preferences take of that */
}

/* these three commands will queue a read, put a character,
and put a string to the serial device (respectively) */

void mgetchar(c) char *c; {
    rser->IOSer.io_Data = (APTR) c; rser->IOSer.io_Length = 1;
    rser->IOSer.io_Command = CMD_READ;
    SendIO(rser);
}

void mputchar(c) char c; {
    wser->IOSer.io_Data = (APTR) &c; wser->IOSer.io_Length = 1;
    wser->IOSer.io_Command = CMD_WRITE;
    DoIO(wser);
}

void mputstring(c) char c[]; {
    wser->IOSer.io_Data = (APTR) c; wser->IOSer.io_Length = -1;
    wser->IOSer.io_Command = CMD_WRITE;
    DoIO(wser);
}

/* same three functions here, just to the console.device */

void cgetchar(c) char *c; {
    rcon->io_Data = (APTR) c; rcon->io_Length = 1;
    rcon->io_Command = CMD_READ;
    SendIO(rcon);
}

void cputchar(c) char c; {
    wcon->io_Data = (APTR) &c; wcon->io_Length = 1;
    wcon->io_Command = CMD_WRITE;
    DoIO(wcon);
}

```



```

void cputstring(c) char c[]; {
wcon->io_Data = (APTR) c; wcon->io_Length = -1;
wcon->io_Command = CMD_WRITE;
DoIO(wcon);
}

main()
{
/* these two variables are the buffers for incoming
reads */
char min, cin;

openup();

/* immediately queue up reads for both console
and serial */

mgetchar(&min);
cgetchar(&cin);

cputstring("ZipScript v0.0 - 1991 by Doug Thain\n");

/* feel free to change (or omit) this following command
- it is initializing info for a Hayes modem */

mputstring("AT X4 L1 S11=50\r");

while(1) {

/* wait for input from the console read port,
the serial read port, or the window's user port */

Wait( 1<< rconport -> mp_SigBit |
1<< rserport -> mp_SigBit |
1<< wport -> mp_SigBit );

/* from the window, can't be anything except
CLOSEWINDOW, so die */

if(msg=GetMsg(wport)) {
ReplyMsg(msg);
AbortIO(rcon);
AbortIO(rser);
closedown(0);
}

/* ok, got a char from the modem - WaitIO() is
necessary to remove the message from the MsgPort.
We'll strip the parity off (min = min & 07f) as
a safety, put the char to the console, and queue
up another read */

while(CheckIO(rser)) {
WaitIO(rser);
min = min & 0x7f;
cputchar(min);
mgetchar(&min);
}

/* incoming from the console - same as modem except
no parity to strip */

while(CheckIO(rcon)) {
WaitIO(rcon);
mputchar(cin);
cgetchar(&cin);
}

/* end while */
}
}

```

•AC•

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(—DePuzzle continued from page 54.)

```

condition)
    If (the state is a goal
        Report and quit;
    Otherwise:
        Enqueue the state into
queue of untried states;

```

Whenever the program generates all the possible “children” states that follow a “parent” state, it assigns weights to the states, based on their potential to lead to the goal. The states are then placed into a list of untried states; the list (actually a queue, in data-structure jargon) is sorted by weight, so the program can then easily choose the most promising path to follow. Unlike the backtracking of DFS, A* can skip around the puzzle instantly if a particular path winds up being nonproductive. A* is also guaranteed to find a solution, if one exists, but it can do so much faster than DFS. The tradeoff is a slightly more complex algorithm and more memory usage, because the program has to keep track of many paths instead of just one. The use of weighting statements is what sets this apart from DFS; without any weighting, A* performs exactly like DFS.

I have modified the A* algorithm somewhat by allowing it to check for paths that have already been followed. This increases the complexity of the program a bit, but I’ve found that it allows the program to find a solution much faster, and actually saves memory. This was important to me, since I have only 1MB in my unaccelerated Amiga!

Improvements

There are several areas of this program that could use some improvement. Memory usage and allocation could be improved. A standard Intuition interface could be added. Error-handling could be improved. I didn’t do much in these areas because I wanted to keep the size of the program down as much as possible, since memory usage can be quite high, while preserving simplicity. In the meantime, I hope that this program can be useful to you. Hopefully this can demonstrate how to use a simple AI algorithm and various data structures to solve a problem. Or a puzzle.

listing 1: depuzzle.c

```

/*      depuzzle.c                      27 April 1991

    Given the name of a “puzzle file” (which
contains
    a number of rules, an initial state, and a goal
state), the program attempts to solve the puzzle
defined by that puzzle file. The user may also
include “weight” parameters in the puzzle file,
which can dramatically improve program perfor-
mance.

    The program runs from the CLI only.

*/

/* INCLUDE FILES */
#include <stdio.h>

/* DEFINES */
#define TRUE      1      /* Boolean TRUE
*/
#define FALSE    0      /* Boolean FALSE */

```

```

#define STRINGLENGTH 80      /* Length of strings
*/
#define APOSTROPHE    39     /* ASCII value of ‘
*/
#define NONBLANK  ‘‘      /* Non-blank positions */
#define BLANK  ‘_’        /* Blank positions
*/
#define FIRSTCHAR ‘A’      /* First position name */
#define VAR1  ‘a’          /* First position ref
*/
#define VAR2  ‘z’          /* Last position ref
*/
#define FIELD  ‘,’         /* Field separator
char */
#define REPORTFREQ 1000    /* Frequency of
reports */
#define HTSIZE 37          /* Hash table size
*/

/* TYPEDEFS */
typedef short  BOOL;

/* STRUCTURES */
struct Rule {                /* For storing rules
*/
    struct Rule  *NextRule;
    char  Pre[STRINGLENGTH],
    Post[STRINGLENGTH],
    Cmt[STRINGLENGTH];
};

struct Weight {              /* For storing
weights */
    struct Weight  *NextWeight;
    char  Cond[STRINGLENGTH];
};

struct State {               /* For storing states
*/
    struct State  *ParentState,
    *NextState;
    char  Desc[STRINGLENGTH];
    struct Rule  *RuleUsed;
    int  Weight;
};

struct Hash {                /* Hash Table entries
*/
    struct Hash  *NextHash;
    char  *StateDesc;
};

/* GLOBAL VARIABLES */
struct Rule  *RuleBase;      /* List of Rules */
struct Weight  *Weights;     /* List of Weights
*/
struct State  *Initial,      /* The Initial state
*/
    *Goal,                /* The Goal State*/
    *Tried,                /* List of tried
states */
    *Untried;              /* Untried states
queue */
struct Hash  *HashTable[HTSIZE]; /* The hash table
*/
int  HTFactor,              /* Used in hash table
*/
    NumPegs; /* Goal number of pegs */

/* FUNCTIONS */
void  report(),              /* Report solution
*/
enqueue(),                  /* Put state in

```



```

Untried */
Tried */
weight*/
*/
*/
memory */
HashTable */
HT*/
*/
*/
struct State
*/
*/
BOOL
tion */
HashTable?*/
goal */
*/
int
*/
*/
*/
HT */

dequeue(), /* From Untried to
assign_weight(), /* Assign state's
free_states(), /* Frees state memory
free_rules(), /* Frees rule memory
free_weights(), /* Frees weight
apply_rule(), /* Applies a rule*/
hash_init(), /* Initializes
hash_enter(), /* Enters a state into
free_hash(), /* Frees HT memory
mem_err(); /* Report memory error
*list_of_children(), /* List of children
*try_rule(); /* Try a rule
search(), /* Search for solu-
hash_find(), /* Is state in
at_goal(), /* Have we reached
init(); /* Initialize program
eval_rule(), /* Evaluates a rule
peg_count(), /* Counts pegs
hash_val(); /* Returns index into

```

```

/* MAIN PROGRAM */
void main(argc,argv)
    int argc; /* Number of CLI args
*/
    char *argv[]; /* The CLI args */
    BOOL success; /* Are we successful? */
if (argc!=2)
    fprintf (stderr, "Usage: depuzzle <puzzle
filename>\n");
else {
    success = init(argv[1]);
    if (success) {
        success = search();
        if (!success) fprintf (stderr, "No solution
found!\n");
    }
    else
        fprintf (stderr, "Error in puzzle file %s\n",
argv[1]);
}
free_states (Tried);
free_states (Untried);
free_rules();
free_weights();
free_hash();
}

```

```

/* This function enters the Initial and Goal states and
the
rules from the supplied ASCII file. It also enters any
weights that the user may care to add. The states,
rules,
and weights may occur in any order, one per line.
*/
BOOL init(f)

```

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```

char *f; /* Puzzle Filename
*/
FILE *fp; /* File Pointer
*/
char *x, /* Temporary hold var
*/
line[STRINGLENGTH]; /* Input
*/
int l_index, /* Indices into the
*/
r_index, /* various arrays
*/
w_index;
struct Rule *last_rule1, /* For entering
*/
*last_rule2; /* rules
*/
struct Weight *last_weight1, /* For entering
*/
*last_weight2; /* weights */

RuleBase = NULL;
Weights = NULL;
Initial = Goal = Tried = Untried = NULL;
NumPegs = 0;
hash_init();
fp = fopen (f, "r");
if (fp) {
    while (!feof(fp)) {
        x = fgets(line, STRINGLENGTH, fp);
        switch (line[0]) {
            case 'i': /* Enter initial state */
                if (!Initial) Initial = (struct State *)
                    malloc(sizeof(struct State));
                if (!Initial) mem_err();
                Initial->ParentState = Initial->NextState =
NULL;
                Initial->RuleUsed = NULL;

```



```

Initial->Weight = 0;
strcpy (Initial->Desc, &(line[2]));
Initial->Desc[strlen(Initial->Desc)-2] = '\0';
fprintf (stderr, "Initial: %s\n", Initial-
>Desc);
HTFactor = strlen(Initial->Desc);
break;
case 'g': /* Enter goal state */
if (!Goal) Goal = (struct State *)
    malloc(sizeof(struct State));
if (!Goal) mem_err();
Goal->ParentState = Goal->NextState = NULL;
Goal->RuleUsed = NULL;
Goal->Weight = 0;
strcpy (Goal->Desc, &(line[2]));
Goal->Desc[strlen(Goal->Desc)-2] = '\0';
fprintf (stderr, "Goal: %s\n", Goal->Desc);
break;
case 'n': /* Enter number of pegs */
NumPegs = atoi(&line[2]);
break;
case 'r': /* Enter a rule */
last_rule2 = (struct Rule *)
    malloc(sizeof(struct Rule));
if (!last_rule2) mem_err();
last_rule2->NextRule = NULL;
if (!RuleBase) RuleBase = last_rule1 =
last_rule2;
else {
    last_rule1->NextRule = last_rule2;
    last_rule1 = last_rule2;
}
l_index = 2; r_index = 0;
while (line[l_index] != FIELD)
    last_rule2->Pre[r_index++] = line[l_index++];
last_rule2->Pre[r_index] = '\0';
l_index++; r_index = 0;
while (line[l_index] != FIELD)
    last_rule2->Post[r_index++] =
line[l_index++];
last_rule2->Post[r_index] = '\0';
l_index++; r_index = 0;
while (line[l_index] != FIELD)
    last_rule2->Cmt[r_index++] = line[l_index++];
last_rule2->Cmt[r_index] = '\0';
break;
case 'w': /* Enter a weight */
last_weight2 = (struct Weight *)
    malloc(sizeof(struct Weight));
if (!last_weight2) mem_err();
last_weight2->NextWeight = NULL;
if (!Weights)
    Weights = last_weight1 = last_weight2;
else {
    last_weight1->NextWeight = last_weight2;
    last_weight1 = last_weight2;
}
l_index = 2; w_index = 0;
while (line[l_index] != FIELD)
    last_weight2->Cond[w_index++] =
line[l_index++];
last_weight2->Cond[w_index] = '\0';
break;
/* anything else is considered a comment line */
}
fclose (fp);
}
else fprintf (stderr, "Error opening puzzle file %s\n",
f);
return ((BOOL)(Initial && (Goal || NumPegs) &&
RuleBase));
}

```

/* This function determines whether we've reached the

```

goal
condition.
*/
BOOL at_goal(s)
    struct State *s; /* Pointer to a state
*/
{
    BOOL ret; /* Successful?
*/
ret = FALSE;
if (Goal) {
    if (strcmp(s->Desc, Goal->Desc)==0) ret = TRUE;
}
if (NumPegs) {
    if (peg_count(s->Desc) == NumPegs) ret = TRUE;
}
return (ret);
}

```

/* This function returns the number of "pegs" (non-blank characters) in the supplied string.

```

*/
int peg_count(s)
    char s[]; /* The string to
count */
{
    int ret, /* Return value
*/
    index; /* Index into the
string*/
index = ret = 0;
while (s[index]) {
    if (s[index++] != BLANK) ret++;
}
return (ret);
}

```

/* This function is the main control function.

```

*/
BOOL search()
{
    BOOL goal_found; /* Have we found
it? */
    struct State *t, /* Temporary hold
*/
    *t2; /* variables */
    int num_tried; /* # of steps
tried */
t = NULL; goal_found = FALSE; num_tried = 1;
if (at_goal(Initial)) {
    report (Initial);
    goal_found = TRUE;
}
else {
    fprintf (stderr, "Searching....\n");
    enqueue (Initial);
    while (!goal_found && Untried) {
        t = list_of_children();
        if (t) dequeue (TRUE);
        else dequeue (FALSE);
        while (t && !goal_found) {
            if ((num_tried % REPORTFREQ)==0)
                fprintf (stderr, "Tried: %d\n",
num_tried);
            if (at_goal(t)) {
                goal_found = TRUE;
                free_states (t->NextState);
                report (t);
            }
            else {
                t2 = t->NextState;
                enqueue (t);
                t = t2;
            }
            num_tried++;
        }
    }
}

```



```

    }
}
return (goal_found);
}

/* This function is called after the Goal state is
reached.
It reports the steps that the program took to get from
the
Initial state to the state supplied as a parameter to
this
function, which should be the goal.
*/
void report(s)
    struct State *s; /* Report steps to
this */
{
    struct State *q; /* Temporary hold var
*/
    fprintf (stderr, "\nGOAL FOUND!\n");
    q = s;
    s->NextState = NULL;
    while (q->ParentState) {
        s = q->ParentState;
        s->NextState = q;
        q = s;
    }
    while (s) {
        fprintf (stdout, "%s\t\t", s->Desc);
        if (!(s->RuleUsed))
            fprintf (stdout, "(Initial State)\n");
        else fprintf (stdout, "%s\n", s->RuleUsed->Cmt);
        s = s->NextState;
    }
}

```

```

/* This function is called when there was an error
allocating memory, probably indicating an out-of-memory
condition.
*/
void mem_err()
{
    fprintf (stderr, "MEMORY ALLOCATION ERROR !!!\n");
    free_states (Untried);
    free_states (Tried);
    free_rules();
    free_weights();
    free_hash();
    exit (1);
}

```

```

/* This function frees all states in the list supplied
to
the function.
*/
void free_states (t)
    struct State *t; /* Free memory starting
*/
    struct State *t2; /* from t
*/
{
    fprintf (stderr, "Freeing State memory....\n");
    while (t) {
        t2 = t->NextState;
        free(t);
        t = t2;
    }
}

```

```

/* Like free_states(), this function frees memory
allocated
for rules, which is all contained in the list pointed to
by

```

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```

RuleBase.
*/
void free_rules()
{
    struct Rule *t, /* Free all Rule
memory */
    *t2; /* using these vars
*/
    fprintf (stderr, "Freeing Rule memory....\n");
    t = RuleBase;
    while (t) {
        t2 = t->NextRule;
        free(t);
        t = t2;
    }
}

```

```

/* Like free_states(), this function frees memory
allocated
for weights, which is all contained in the list pointed
to
by Weights.
*/

```

```

void free_weights ()
{
    struct Weight *t, /* Free Weight memory
*/
    *t2; /* using these vars
*/
    fprintf (stderr, "Freeing Weight memory....\n");
    t = Weights;
    while (t) {
        t2 = t->NextWeight;
        free(t);
        t = t2;
    }
}

```



```

/* This function frees the memory taken up by HashTable
nodes.
*/
void free_hash()
{
    struct Hash    *h,      /* Free Hash Table
mem                */
    *h2;           /* using these vars

*/
    int            index;
    fprintf(stderr, "Freeing Hash Table memory...\n");
    for (index=0; index<HTSIZE; index++) {
        h = HashTable[index];
        while (h) {
            h2 = h->NextHash;
            free (h);
            h = h2;
        }
    }
}

/* This function enqueues the state supplied as a
parameter
into the Untried list. States are queued in the list
from
highest (most promising) Weight to lowest.
*/
void enqueue(s)
    struct State    *s;      /* Enqueue this
state              */
{
    struct State    *p,      /* Use these vars to
*/
    *q;             /* do it

*/
    BOOL            inserted;
    s->NextState = NULL; inserted = FALSE;
    if (!Untried) Untried = s;
    else {
        p = Untried; q = NULL;
        while (p) {
            if (s->Weight >= p->Weight) {
                s->NextState = p;
                if (q) q->NextState = s;
                p = NULL;
                inserted = TRUE;
            }
            else {
                p = p->NextState;
                if (q) q = q->NextState;
                else q = Untried;
            }
        }
        if (!q) Untried = s;
        else if (!inserted) q->NextState = s;
    }
}

/* This function removes the first state from Untried
(for
which the list of children states has just been cre-
ated),
and if supplied with a value of TRUE, puts it in Tried;
otherwise the memory is freed up.
*/
void dequeue(x)
    BOOL            x;      /* Move to Tried?*/
    struct State    *s;      /* Temporary var */
{
    s = Untried->NextState;
    if (x) {
        Untried->NextState = Tried;
        Tried = Untried;
    }
}

```

```

    }
    else free (Untried);
    Untried = s;
}

```

```

/* This function returns a list of successor States for
the
first State in Untried. It does NOT remove that state
from
Untried; the function dequeue() should be called
immediately after this function is called.
*/
struct State *list_of_children()
{
    struct Rule     *r;      /* Current rule
*/
    struct State    *s,      /* These vars de-
scribe          */
    *sl,           /* the list of
resulting      */
    *ret;          /* children states

*/
    r = RuleBase; ret = sl = NULL;
    while (r) {
        s = try_rule(r, Untried);
        if (s) {
            if (sl) {
                sl->NextState = s;
                sl = s;
            }
            else ret = sl = s;
        }
        r = r->NextRule;
    }
    return ret;
}

```

```

/* This function examines the rule and state supplied as
parameters. If the rule can be applied to the state,
the
function creates a child state (the result of the rule
being applied to the parameter state) and returns a
pointer
to the child state. If the rule cannot be used, the
function returns NULL.
*/
struct State *try_rule(r, s)
    struct Rule     *r;      /* Try this rule */
    struct State    *s;      /* against this state

*/
{
    struct State    *ret;    /* The child state
*/
    ret = NULL;
    if (eval_rule(r->Pre, s->Desc)) {
        ret = (struct State *)malloc(sizeof(struct
State));
        if (!ret) mem_err();
        ret->ParentState = s;
        ret->NextState = NULL;
        ret->RuleUsed = r;
        strcpy (ret->Desc, s->Desc);
        apply_rule (r->Post, s->Desc, ret->Desc);
        assign_weight (ret);
        if (hash_find(ret)) { free (ret); ret = NULL;
    }
        else hash_enter (ret);
    }
    return (ret);
}

```

```

/* This function assigns the "weight" for each state.
It

```



```

is by this weight that the queue Untried is ordered. The
higher the weight, the more promising the state.
*/
void assign_weight(s)
    struct State *s; /* State to be
weighed */
{
    struct Weight *w; /* Weight pointer*/
    s->Weight = 0;
    w = Weights;
    while (w) {
        s->Weight = s->Weight + eval_rule(w->Cond, s->Desc);
        w = w->NextWeight;
    }
}

```

```

/* This function evaluates supplied the rule (or weight)
against the supplied state, and returns the number of
matches.
*/

```

```

int eval_rule(r,s)
    char r[STRINGLENGTH], /* Rule to evaluate
*/
    s[STRINGLENGTH]; /* State to evaluate
*/
{
    int r_index, /* Index into rule */
    ret, /* Return value */
    x; /* Intermediate vars
*/
    char y;
    BOOL error; /* Rule invalid */
    r_index = ret = 0; error = FALSE;
    while ((r[r_index] && (!error)) {
        x = r[r_index++] - FIRSTCHAR;
        y = r[r_index++];
        if (y == BLANK) {
            if (s[x] == BLANK) ret++; else error =
TRUE;
        }
        else if (y == NONBLANK) {
            if (s[x] != BLANK) ret++; else error =
TRUE;
        }
        else if (y == APOSTROPHE) {
            y = r[r_index++];
            if (s[x] == y) ret++; else error =
TRUE;
        }
        else if ((y >= VAR1) && (y <= VAR2)) {
            if (s[x] == s[y-VAR1]) ret++; else error =
TRUE;
        }
    }
    if (error) ret = 0;
    return (ret);
}

```

```

/* This function applies the supplied rule to the
supplied
child state, using the supplied parent state as a
reference, if necessary.
*/
void apply_rule(r,p,c)
    char r[STRINGLENGTH], /* The rule
*/
    p[STRINGLENGTH], /* The Parent string
*/
    c[STRINGLENGTH]; /* The child string
*/
{
    int r_index, /* Index into rule */
    x; /* Intermediate vars
*/
    char y;
    r_index = 0;

```

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```

while (r[r_index]) {
    x = r[r_index++] - FIRSTCHAR;
    y = r[r_index++];
    if (y == BLANK) {
        c[x] = BLANK;
    }
    else if (y == APOSTROPHE) {
        y = r[r_index++];
        c[x] = y;
    }
    else if ((y >= VAR1) && (y <= VAR2)) {
        y = p[y-VAR1];
        c[x] = y;
    }
}
}

```

/* This function initializes the HashTable.

```

*/
void hash_init()
{
    int index; /* Index into Hash
Table */
    for (index=0; index<HTSIZE; index++)
        HashTable[index] = NULL;
}

```

/* This function computes the index into the HashTable, given the state description as a parameter.

```

*/
int hash_val(s)
    char s[]; /* The string to store in HT
*/
{
    int index, /* Index into string

```



```

*/
        total, /* Intermediate vars
*/
        place;
index = total = 0; place = 1;
while (s[index]) {
    total += ((int)(s[index])) * place;
    place *= HTFactor;
    index++;
}
total = abs(total);
return (total % HTSIZE);
}

/* This function looks for the supplied state in the
HashTable. If the state is found, the function returns
TRUE.
*/
BOOL hash_find(s)
    struct State *s; /* State to look for
*/
{
    struct Hash *h; /* HashTable node ptr
*/
    BOOL ret; /* Return value
*/
    ret = FALSE;
    h = HashTable[hash_val(s->Desc)];
    while (h) {
        if (strcmp(h->StateDesc, s->Desc)==0) {
            ret = TRUE;
            h = NULL;
        }
        else h = h->NextHash;
    }
    return (ret);
}

/* This function enters the supplied state into the
HashTable. It assumes that the state isn't already in
there!
*/
void hash_enter(s)
    struct State *s; /* State to enter*/
{
    struct Hash *h; /* Hash Table node
ptr
*/
    int index; /* Index into HT */
    h = (struct Hash *)malloc(sizeof(struct Hash));
    if (!h) mem_err();
    index = hash_val(s->Desc);
    h->StateDesc = s->Desc;
    h->NextHash = HashTable[index];
    HashTable[index] = h;
}

```

listing 2: Enoch_rules

```

i=ENCS/____;
g=____/ENCS;
;
r=A'EB'NH'CI'S;A_F'E;E ROWS ALONE FROM 1 TO 2 (1);
r=A'EG'N;A_F'E;E ROWS ALONE FROM 1 TO 2 (2);
;
r=A'EB'N;A_B_F'EG'N;E ROWS N FROM 1 TO 2;
;
r=A'EB'NC'CI'S;A_C_F'EH'C;E ROWS C FROM 1 TO 2 (1);
r=A'EG'NC'C;A_C_F'EH'C;E ROWS C FROM 1 TO 2 (2);
;

```

```

r=A'EB'NH'CD'S;A_D_F'EI'S;E ROWS S FROM 1 TO 2 (1);
r=A'EG'ND'S;A_D_F'EI'S;E ROWS S FROM 1 TO 2 (2);
;
r=F'EG'NC'CD'S;F_A'E;E ROWS ALONE FROM 2 TO 1 (1);
r=F'EB'N;F_A'E;E ROWS ALONE FROM 2 TO 1 (2);
;
r=F'EG'N;F_G_A'EB'N;E ROWS N FROM 2 TO 1;
;
r=F'EG'NH'CD'S;F_H_A'EC'C;E ROWS C FROM 2 TO 1 (1);
r=F'EB'NH'C;F_H_A'EC'C;E ROWS C FROM 2 TO 1 (2);
;
r=F'EG'NC'CI'S;F_I_A'ED'S;E ROWS S FROM 2 TO 1 (1);
r=F'EB'NI'S;F_I_A'ED'S;E ROWS S FROM 2 TO 1 (2);

```

listing 3: Enoch_output

ENCS/____	(Initial State)
____CS/EN____	E ROWS N FROM 1 TO 2
E_CS/_N____	E ROWS ALONE FROM 2 TO 1 (1)
____C_/EN_S____	E ROWS S FROM 1 TO 2 (2)
ENC_/____S____	E ROWS N FROM 2 TO 1
N/E_CS____	E ROWS C FROM 1 TO 2 (1)
EN_/____CS____	E ROWS ALONE FROM 2 TO 1 (2)
____/ENCS	E ROWS N FROM 1 TO 2

listing 4: nine_tile_rules

```

;
r=A_;AbB_;Move B left;
r=A_;AdD_;Move D up;
r=B_;BcC_;Move C left;
r=B_;BaA_;Move A right;
r=B_;BeE_;Move E up;
r=C_;CbB_;Move B right;
r=C_;CfF_;Move F up;
r=D_;DeE_;Move E left;
r=D_;DaA_;Move A down;
r=D_;DgG_;Move G up;
r=E_;EfF_;Move F left;
r=E_;EbB_;Move B down;
r=E_;EdD_;Move D right;
r=E_;EhH_;Move H up;
r=F_;FcC_;Move C down;
r=F_;FeE_;Move E right;
r=F_;FiI_;Move I up;
r=G_;GhH_;Move H left;
r=G_;GdD_;Move D down;
r=H_;HiI_;Move I left;
r=H_;HeE_;Move E down;
r=H_;HgG_;Move G right;
r=I_;IfF_;Move F down;
r=I_;IhH_;Move H right;
i=412583_76;
g=12345678_;
w=A'1;
w=B'2;
w=C'3;
w=D'4;
w=E'5;
w=F'6;
w=G'7;
w=H'8;
w=I_;

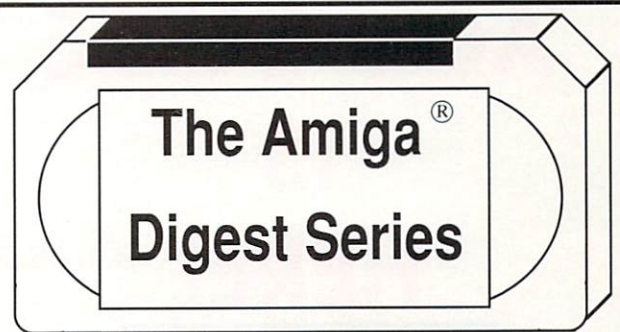
```


listing 5: nine_tile.output

```
412583_76      (Initial State)
4125837_6      Move H left
4125_3786      Move E down
412_53786      Move D right
_12453786      Move A down
1_2453786      Move B left
12_453786      Move C left
12345_786      Move F up
12345678_      Move I up
```

listing 6: peg_rules

```
; Peg Puzzle
r=A_C*E*;AeC_E_;Jump E over C to A;
r=B_C*D*;BdC_D_;Jump D over C to B;
r=C_D*F*;CdD_F_;Jump F over D to C;
r=C_E*H*;ChE_H_;Jump H over E to C;
r=D_F*I*;DiF_I_;Jump I over F to D;
r=D_G*K*;DkG_K_;Jump K over G to D;
r=D_C*B*;DbC_B_;Jump B over C to D;
r=E_G*J*;EjG_J_;Jump J over G to E;
r=E_H*L*;ElH_L_;Jump L over H to E;
r=E_C*A*;EaC_A_;Jump A over C to E;
r=F_I*N*;FnI_N_;Jump N over I to F;
r=F_J*P*;FpJ_P_;Jump P over J to F;
r=F_G*H*;FhG_H_;Jump H over G to F;
r=F_D*C*;FdD_C_;Jump C over D to F;
r=G_J*O*;GoJ_O_;Jump O over J to G;
r=G_K*Q*;GqK_Q_;Jump Q over K to G;
r=H_K*P*;HpK_P_;Jump P over K to H;
r=H_L*R*;HrL_R_;Jump R over L to H;
r=H_E*C*;HeE_C_;Jump C over E to H;
r=H_G*F*;HfG_F_;Jump F over G to H;
r=I_N*T*;ItN_T_;Jump T over N to I;
r=I_J*K*;IkJ_K_;Jump K over J to I;
r=I_F*D*;IdF_D_;Jump D over F to I;
r=J_K*L*;JlK_L_;Jump L over K to J;
r=J_G*E*;JgE_G_;Jump E over G to J;
r=K_G*D*;KdG_D_;Jump D over G to K;
r=K_J*I*;KiJ_I_;Jump I over J to K;
r=L_R*U*;LuR_U_;Jump U over R to L;
r=L_H*E*;LeH_E_;Jump E over H to L;
r=L_K*J*;LjK_J_;Jump J over K to L;
r=M_N*O*;MoN_O_;Jump O over N to M;
r=N_O*P*;NoP_P_;Jump P over O to N;
r=N_I*F*;NiF_F_;Jump F over I to N;
r=O_P*Q*;OpP_Q_;Jump Q over P to O;
r=O_J*G*;OjG_G_;Jump G over J to O;
r=O_N*M*;OnM_M_;Jump M over N to O;
r=P_Q*R*;PrQ_R_;Jump R over Q to P;
r=P_K*H*;PhK_H_;Jump H over K to P;
r=P_J*F*;PfJ_F_;Jump F over J to P;
r=P_O*N*;PoN_N_;Jump N over O to P;
r=Q_R*S*;QsR_S_;Jump S over R to Q;
r=Q_K*G*;QqK_G_;Jump G over K to Q;
r=Q_P*O*;QoP_O_;Jump O over P to Q;
r=R_L*H*;RhL_H_;Jump H over L to R;
r=R_O*P*;RpO_P_;Jump P over Q to R;
r=S_R*Q*;SqR_Q_;Jump Q over R to S;
r=T_N*I*;TiN_I_;Jump I over N to T;
r=U_R*L*;UrL_L_;Jump L over R to U;
;
i=!!!!!!_!!!!!!;
n=1;
w=A_;
w=B_;
w=M_;
w=T_;
w=S_;
w=U_;
```



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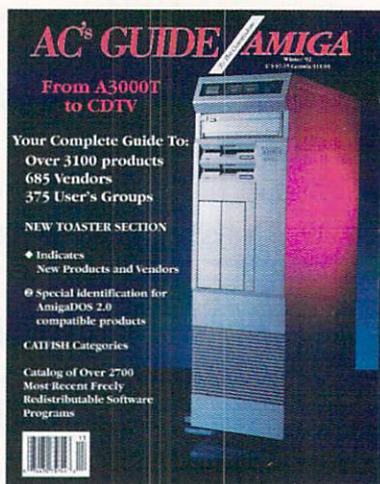
listing 7: peg.output

```
!!!!!!_!!!!!!      (Initial State)
!!!!!!_!!!!!!      Jump Q over K to G
!!!!!!_!!!!!!      Jump S over R to Q
!!!!!!_!!!!!!      Jump P over Q to R
!!!!!!_!!!!!!      Jump N over O to P
!!!!!!_!!!!!!      Jump F over I to N
!!!!!!_!!!!!!      Jump M over N to O
!!!!!!_!!!!!!      Jump P over O to N
!!!!!!_!!!!!!      Jump T over N to I
!!!!!!_!!!!!!      Jump I over J to K
!!!!!!_!!!!!!      Jump C over D to F
!!!!!!_!!!!!!      Jump H over E to C
!!!!!!_!!!!!!      Jump B over C to D
!!!!!!_!!!!!!      Jump R over L to H
!!!!!!_!!!!!!      Jump F over D to C
!!!!!!_!!!!!!      Jump A over C to E
!!!!!!_!!!!!!      Jump E over G to J
!!!!!!_!!!!!!      Jump J over K to L
!!!!!!_!!!!!!      Jump H over L to R
!!!!!!_!!!!!!      Jump U over R to L
```

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Street Rod 2

by Rich Mataka

Travel back to the days of the last era of muscle cars with the ultimate street racing simulation, *Street Rod 2*. Summer is here and you have just received your license. You've saved your hard earned money to buy a car and race just like your big brother. All summer long he spent racing for pink slips and souping up his car until finally he shut down the King of the Road. Now it's your turn to follow in your brother's foot steps. Will the summer of '69 be yours? Grab your money and start looking through the papers for the car and parts you can afford. Then customize the car so that you're the envy of the other rodders on the street.

Opening the box, you find two disks, the Product Registration card, a manual, and a supplemental sheet that is specifically for the Amiga. The main manual was originally written for the IBM version of the game and there were some changes made to the Amiga version. Most notably is the amount of money that you have at the start of the game. The manual mentions starting the game with \$1200 dollars. However, in the Amiga version of the game you're starting with only \$750. This is a big disparity and does affect the play of the game. Therefore, I called California Dreams, the design-

ers of the game, and they advised that a revision of *Street Rod 2* will be available to all registered owners at no charge. The revision will increase the amount of money that you start the game with from \$750 to \$1200. This revision should be available by the time this review is printed. The manual is 41 pages, divided into 11 sections and is full of useful and informative information. Probably the most useful sections of the manual are the "Using the Dailies," "Tear It Down, Build It Up," "Racing," and "Tips and Tricks." "Using the Dailies" shows you how to purchase your car and all the other hopped up parts that are available in the

daily newspaper. This section is important as you follow the guidelines on how to buy replacement parts for your car. The "Tear It Down, Build It Up" section instructs you on how to make changes to your car with the parts you have bought and there are explanations of the icons which you will encounter in your garage. This section should be studied closely. It is the most important part of the manual and explains how to get through the various options that are available. The "Tips and Tricks" section offer some hints on how to win the game. Overall, the manual is written well and all the game features are thoroughly explained.



Go for a cruise and check out the competition in *Street Rod 2*.

There is no disk copy protection used on *Street Rod 2*; therefore, the first thing you should do is make a backup. As you start the game, you are asked a question concerning the manual. To answer this question, you must refer to a specific page of the manual and answer the question correctly.

When starting a new game, you must first purchase a car. Browse through the used car ads in the daily Los Angeles Newspaper. You have a choice of only three cars which you can afford. These cars are the 1963 Ford Falcon, 1960 Mercury Monterey, or the 1962 Plymouth Fury. Each of these offers only basic transportation and all of them need your mechanic skills. Once you choose, you can purchase parts or begin customizing your car. Every action costs money, and in the beginning of the game money is scarce.

The first step you should perform is to customize your car and to get it into tip-top shape. To do this, you need to tune your car's engine. Place the wrench that is used as an icon pointer on the hood of the car and press the left mouse button. When you have performed this action, you will see a screen of your car's engine and the tune option in the lower left of the screen. Choosing this option brings in your tuning tool, and by adjusting the tuning bolts on the engine you can increase the speed of your car. When you have completed tuning your car, it is now time for the customization.

You should immediately remove the bumpers and chop off the roof of your car. This action is accomplished by moving the wrench pointer to each of the bumpers and roof and paying for the job to be done. Removing each bumper costs \$15 and chopping the roof costs \$70. This removes weight from the car, giving you additional speed. As a final customization, you should also give your car a new paint job. This costs only \$20 but it does add to the game value as opponents want to race a sharp-looking car, not a beat up wreck. The next step is to cruise to the gas station and fill-er-up.

Now that you have completed all the modifications to your car that you can afford, it's time to cruise on down to Burger's Bungalow and check out the competition. As you sit there, different cars will pass in front of the Bungalow. When they pass, you will be given an opportunity to examine each car's engine with the exception of the King of the Road. As of yet, you have not proven yourself a worthy adversary for him to pause or give you the time of day. When you have found someone that you want to challenge, you click on the individual in the car. Now you are given a choice of three types of races from which to choose. They are the typical drag race on a mile-long straight away, and the Aqueduct Race or race on Muholland Drive, each considered road races of approximately two-and-a-half-

miles long. Some opponents will road race against only you after you have drag-raced them, while others will race all comers.

There are specific betting limits that are placed on each race. For example, with the drag race you can drag for fun, bet \$10, or \$50. However, when you road race, the stakes are higher and you can even race for "pink slips." However, you had better wait until you feel that your car is fast enough because it's easy enough to lose your own car as a result of a road race. To play the game, you must build up your capital. The way that you perform this function is to win drag races and road races. You must initially save all of your winnings to purchase parts, such as a V-8 engine, a racing transmission, and slicks just for beginners. When you feel that your car is fast enough, you race for pink slips. When you have won a few cars, you sell them to make more money. Racing wears and tears your car's parts and you must replace the worn parts by purchasing new parts.

Street Rod 2 in its current form is a tough game to win. When starting with only \$750, you are very limited as to the cars and parts that you can buy. As I have mentioned, you're entitled to the \$1200 version. I think that it will be easier to get through the game as for right now it's a very difficult game to win. Overall, *Street Rod 2* is a fast moving, highly enjoyable game. *Street Rod 2* is a challenging combination of strategy and arcade action with its mixture of arcade-style racing and strategy of allowing the player to decide the type of car and what parts will be installed in the car. Playing the game from beginning to end can take some time; however, there is a save game feature that should be used often. When the new version of the game is available, it will be that much more entertaining by allowing you to further customize your car from the start of the game. While it will make the game easier in some respects, I don't believe that it will affect its challenging nature. *Street Rod 2* is one of those games that will capture your interest and imagination, hold it, and keep you coming back for more.



In *Captive*, the droids are in combat with an alien lifeform on the planet. The main view-screen is shown through the sensors on your lead droid.

Captive


by Miguel Mulet

Awakening after a 250-year sleep, you examine your surroundings. It looks like a prison cell, but there certainly is plenty of junk around. How did I get here? you ask yourself. Things suddenly become clearer, as you recall that you were convicted of a crime that you didn't commit—a crime which sentenced you to 250 years of suspended animation. There has to be a way out. You quickly re-examine your surroundings, and discover a briefcase computer which has been left in your cell. Apparently your captors thought you'd be asleep a bit longer, and were using the cell for storage. As you turn on the computer, you realize that it controls four robots, not just any robots, but four military robots—robots that are located *outside* of your prison. Perhaps they can help you escape, so you no longer remain CAPTIVE!

Captive is a futuristic version of *Dungeon Master*, brought to you by Mindscape. You are Trill, a prisoner in a galactic prison. The briefcase computer controls four droids located on another planet. To escape, you must not only activate the four droids, but you must lead them from planet to planet collecting weapons and other items they'll need to break you out of prison. You'll be free once the droids find and destroy the generators on 11 different planets.

You view the world outside through the eyes of your droids. Their video signal is displayed on the main viewscreen of your briefcase computer. You select one droid as the leader, and the main viewscreen shows the world as he sees it. As you collect or buy video cameras, you can assign them to other droids, allowing you to view what they see via the smaller viewscreens at the top of your computer screen.

Maneuvering the droids is fairly easy—just click on the arrow shown on the viewscreen with your mouse, and the group moves in that direction. You can shuffle the order in which the droids are grouped by moving the icon which represents each droid on the right portion of the screen. Clicking on the droid icon with the right mouse button



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reveals the droids statistics: what they are holding, their strength, etc. Objects are represented by icons to the right of the droid. If you want the droid to hold an object, like a gun, you just move the icon into the droid's hands. Once a weapon is in a droid's hand, it can be fired by clicking on the hand which holds the weapon shown in the main viewscreen.

The game is played completely from the mouse-driven briefcase computer viewscreen. You fly your droids from planet to planet in their ship, The Swan, by using the control panel in the briefcase. Once they have reached their destination, they make planetfall by climbing aboard a small shuttlecraft. The control cursors move the droid party in any of six directions. Exploring each world takes time and patience, as well as a pencil and paper. Like in *Dungeon Master*, these mazes can become quite complex.

Game graphics and sound effects are average, though effective. There isn't much of animation on the screen, but just enough to make the game realistic. Running into a wall, accidentally, of course, results in an "Ugh" from your droid, along with a little bit of static on the viewscreen. Weapons, including parries with the hands, also issue an appropriate sound effect. Your enemies are slightly animated as well.

Gameplay is the key to *Captive*. The mazes on each planet are progressively more difficult and challenging. It takes a while to learn how to control your droids and get them working the way you want, but considering that the technology is from 250 years in the future, it is to be expected. Once

you have mastered the basics, you can explore 11 different worlds, getting better and better equipped along the way. Ultimately, you'll even gain your freedom.

There's a much to see and do in *Captive*. There are a purported 65,535 bases in a total of 5,957 missions! This game is a pleasant balance among strategy, exploration, and gameplay. If you enjoy games such as *Dungeon Master*, you'll certainly love *Captive*!

The Gold of the Aztecs

by Miguel Mulet

There are ancient ruins all over the world, many of which are rumored to contain wealth beyond the imagination. The Aztecs are rumored to have stashed an enormous amount of gold and jewelry within Aztec temples, which they dedicated to a god named Quetzalcoatl. Now hidden in the jungles of Central America, the treasure lies awaiting someone brave enough to recover it. Can you find *The Gold of the Aztecs*?

The Gold of the Aztecs is an arcade adventure which takes you to the jungles of Central America, courtesy of U.S. Gold. You assume the role of Bret Conrad, an ex-special forces soldier who is out looking for fame and glory—as well as a way to get rich. Thus, you set out to recover Quetzalcoatl's



Explore the jungle in search of hidden treasure.

treasure, armed with a machete, pistol, and a bit of luck.

Maneuvering Bret around is quite easy. Your joystick moves him left and right, and pressing down on the fire button allows him to jump. Hitting the spacebar selects the active weapon, allowing the character to chop with his machete or fire his pistol. There is a limited supply of bullets, so don't get trigger happy.

With three lives, you really have to be careful while exploring the jungle as well as the Aztec ruins. Natives fire lethal darts at you, while the coconuts the monkeys throw at you merely deplete your strength. Your current status is shown by a small display at the lower right corner of the screen. Unfortunately for the player, it is much too easy to die in this game. Getting run over by an elephant can also be quite messy.

The sound effects are quite good. I especially enjoyed the background sounds in the jungle, which included the sounds of monkeys, bugs, and the like, adding an effective air of reality. Animations were adequate—things moved a little slowly, and were a bit choppy. The actual graphics seemed to vary from part to part. Your main character is nothing to write home about, but the detailed drawings of the animals were excellent.

The game is provided on two *doubly* copy-protected diskettes. Not only can you not duplicate the disks, but there is also an extremely difficult-to-read black ink on black cardboard code disk, from which you have to enter three different codes! Doing this is extremely tedious.

Overall, *The Gold of the Aztecs* is a fair action-adventure game. It is difficult to play, as there are almost too many ways to die—and no way to save a game in progress. If you're the patient type and don't mind dying often, try your hand at this one. Otherwise, you may want to look for buried treasure elsewhere.

Product Information

The Gold of the Aztecs

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U.S. Gold

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Inquiry #206

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Inquiry #208

Garden Fax

Price: \$49.95

CDTV Publishing

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CDTV EXTRA

Garden Fax

by Steve King

The premise of *Garden Fax* is to let the user specify a number of criteria related to plants and then the program will come up with a suitable plant. The main screen consists of nine icon boxes, seven of which represent search criteria. The eighth is the "A-Z" button which lets you search for plants based on the first two letters of their names. The last is the icon which actually commences the search.

The first criteria is the color of the plant and the second is the type of foliage, feathery or succulent, for instance. The third is the light condition in your home or garden. The fourth lets you select the size of the plant while the fifth specifies the temperature for the Indoor Plant title, and the type of soil for the Garden Plant title. The sixth lets you choose the type of plant, hanging or climbing, in the Indoor Plant title, and the planting month in the Garden Plant title. Finally, you get to select which month you would like the plants to bloom. As you select the various criteria, a number in the Search icon changes to let you know precisely how many plants meet your standards.

As an example, I looked for a small, red/pink indoor plant that didn't require much sunlight and blooms in May or June. As I selected my options, my choices decreased from 210 down to three. The program then searched its database and displayed pertinent information on all three including small pictures, which can be enlarged to full screen, and how to care for them. At times, the word "film" appears on the screen as you scroll through the text. If you move the icon to that word and press the "A" button, a series of pictures will be displayed with audio explaining the topic at hand. In my example, while viewing the screen on the Red Hot Catstail, I learned how to cut and plant the flower.

While these programs have an audience limited to gardeners, which may, of course, number in the millions, ordinary gardening books simply don't have the capability of acting as an interactive database to enable the reader to select the proper plants based on varying criteria. This title also works on the Amiga.

•AC•



ROOMERS

by The Bandito

[These statements and projections presented in "Roomers" are rumors in the purest sense. The bits of information are gathered by a third-party source from whispers inside the industry. At press time, these rumors remain unconfirmed and are printed for entertainment value only. Accordingly, the staff and associates of Amazing Computing cannot be held responsible for the reports made in this column.]

Amiga 2001: A RISC Odyssey

The Amiga in the year 2000—what will it look like? Is the RISC Amiga the vision of the future? The Bandito hears whispers that Commodore is thinking about creating a RISC Amiga. It would be based on one of those spiffy, high-speed RISC chips you've been hearing so much about from other computer makers. Such a chip would yield very high performance at a low price—perhaps 10 or 20 times as much power as a 68040 for about the same cost. But could AmigaDOS make the transition to another CPU? That's the tough question. Particularly, how much software compatibility could be maintained? There are no answers right now. But it's possible that the next version of AmigaDOS could be made more portable; in fact, that will be one of the design goals for the projected 3.0 software.

But it's not enough just to have a faster CPU; all the other parts of the computer have to get speedy, too. Faster

RAM chips cost more money, as anybody who's bought an accelerator card knows. And then the blitter has to keep up, too, so that would mean an entirely new chip—possibly a DSP or maybe another RISC chip. Of course, the data transfer rate on the bus has to go up, too. The Bandito suggests something like the new Silicon Graphics Indigo, where the bus can move data at the rate of 133MB/sec. That sounds about right for video. You know, SGI's little purple box sounds like what the Amiga of the future should be. It's got 8MB of RAM, a blazing hot CPU with CD sound and graphics acceleration, all for a base price of \$8,995.

Here's the Bandito's idea: maybe Silicon Graphics should buy the Amiga from Commodore. SGI would get an operating system better than clunky old UNIX, and they'd get a way to reach the consumer market. Sounds like a match made in heaven.

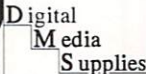
Peripherals Take Center Stage (GVP press release)

It was only a matter of time before Amiga peripherals king GVP jumped onto the video bandwagon. They've officially released the Impact Vision 24 board, which throws together a number of video features. It's designed for the A3000, but it can also work in the A2000. It's got genlocking, 24-bit display, flicker fixing, frame grabbing, and it'll display live video in an Amiga window. Plus, GVP has

bundled a load of software with it for titling, 24-bit painting, and 3-D modelling and rendering. It's not cheap, though; you'll have to spend more than two thousand clams to get all this. But the Bandito has always wanted to be able to watch TV while pretending to work on the Amiga. *[For a review of Impact Vision 24, see the 6.11 issue, p.48.—Ed.]*

Those GVP geniuses aren't content to take on the video market; they're also making some moves into audio. Their new Digital Sound Studio sound digitizer box comes with a complete set of software to record and edit sounds. You can even modify sounds in real time. Looks like GVP is going to have a winner with this one. What hardware will they tackle next? The Bandito has some suggestions: an A500 expansion chassis, a simple low-cost 24-bit display card without all the added features of the Impact card, and maybe a conversion kit to turn an A500 into a notebook computer, color screen optional. Get busy, OK?

GVP isn't the only hardware manufacturer in town that's been busy. Supra will release their 9600 baud/fax-capable modem in January for a list price of about \$350. Amiga owners will be able to send and receive faxes from the Amiga, and of course you'll still be able to run other programs at the same time. They are also working on their own 68040



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accelerator, which will zip along at 28 MHz or maybe even 33, with 64K of cache memory to speed it up even more.

CD-ROM War Breaks Out

The Bandito hears that Commodore is finally going to acknowledge that CDTV really is a computer—not that it's been a deep, dark secret, after all. Next year Commodore will offer a special price on a bundle for CDTV that includes a keyboard and a disk drive, so that CDTV can become a fully fledged Amiga—and play all those Amiga games that aren't migrating to CD-ROM. In the meantime, Commodore has been trying to boost slow CDTV sales with a price cut of \$200, from a list of \$999 to a list of \$799; the street price is around \$750. Commodore has also bundled CD's with CDTV, including the *Grolier Encyclopedia* and the ever-popular *Lemmings*.

For the future, Commodore is stepping up efforts to get CDTV software by offering even more assistance to developers. Let's hope that we see even better CDTV software, not just a lot more quickie transfers to CD-ROM.

Many CDTV's are apparently going into businesses, and not a lot into the homes. The general recession is probably one good reason; who wants to spend \$800 on a brand new toy when he's not sure he'll have a job next month? Commodore is hoping that when the economy picks up, sales will too. They've

been showing some pretty good CDTV commercials in spot markets around the country, and using some newspaper advertising as well.

But now the heat is really on as Philips finally makes its move with CD-I. Contrary to their initial statement in June, the price of CD-I isn't \$1400; it's \$1000, and the street price is \$799. Funny thing, isn't it, that \$799 just happens to be the same as CDTV's price tag. What a coincidence. (If you believe that, The Bandito has some old Plus/4's to sell you, in cash. Small bills only, please.) And Philips is pushing hard with a series of newspaper ads, in the same markets as

zippy samplers of various kinds of software available. And the demo should be self-running; no interaction needed. Of course, if the user does step up to interact, then it should become even more fun.

So the battle has been joined, and it looks to be a tough one. Commodore has the initial lead, but Philips is spending hard to catch up. Of course, they aren't the only combatants. The new year will see many more CD-ROM machines coming to the battle. The "multimedia PC's" being touted by several companies are too expensive to compete directly. But the upgrade kit for a regular MS-DOS machine to become a multimedia PC costs about \$1000 now, and that price will drop. So we could see a lot of Messy-DOS machines trying to become ersatz CDTVs in the next year.

Meanwhile, over in Japan, there are some interesting CD developments. It seems that Mitsui and several other Japanese firms are joining what has become known as the "CDTV Consortium" to create and publish CDTV titles for distribution in the Japanese market. The big question is, will any of these companies sign up to manufacture CDTV? Interestingly enough, many of these firms are CD-I licensees; their intent was to build and sell CD-I players. But so far, Philips is the only company that has even announced a consumer CD-I player.



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Commodore. Philips is also going one better than Commodore by providing stores with demo kiosks containing a CD-I machine along with 60 software titles; they claim over 1000 retail outlets have agreed to display the kiosk, including Sears. Philips is providing employee training and touring demonstrators.

Meanwhile, Commodore has a rather lame Welcome disc playing in their demo machines, and it's not a good demo. CDTV needs to have a really killer demo that's entirely self playing; it would be nice if it showed you how to use the system, too—a feature which wouldn't be hard to accomplish. The demo should show lots of cool pictures, video clips,

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Several Japanese firms have played with the technology, but not one has leapt into the market yet. Could it be that they're not sure about CD-I's success in the marketplace? That's the Bandito's guess. The Bandito predicts that the CD-ROM War will be won by the machine with the biggest and best software base. Or, perhaps, another way to tell who's winning: see what format the first CD-ROM player from another company uses, either CD-I or CDTV. If either format is to become a standard like the VHS VCR, then it's inevitable that more than one company will supply the players. It's too early to tell who'll win right now. But it will prove to be an exciting fight.

Commodore Comedy

Will IBM buy Commodore? Why not; it would complete the computer industry consolidation, now that Big Blue is eating the Apple. There's been a lot of talk over IBM and Apple's agreements, but that's really all it is so far: talk. If anything does come of this deal, it won't happen for years. Don't hold your breath waiting for these two giant sloths to mate and have offspring. Buy an Amiga now if you don't already have one; we'll stick with the normal-sized sloth, thank you. Actually, there is one thing that Apple and IBM might do together that would affect Amiga owners—setting up a standard multimedia file format. Such a format

would describe how to store sound, graphics, video, and text all in one lump. If a standard is set, Commodore will probably encourage developers to adopt it. This standard would perhaps bear some resemblance to existing IFF formats, because the creator of IFF is Jerry Morrison, who now works at Apple on — you guessed it—file formats, among other things.

Commodore has sold its three-millionth Amiga. In typical Commodore fashion, they haven't received any notice in the press about this. That's more than the number of color Macintoshes out there, fer cryin' out loud. Yet they still can't convince Microsoft to develop for



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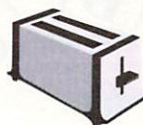
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the Amiga. Maybe those Microsofties ought to reconsider; Apple and IBM don't seem to be their friends anymore. Could be they'll need a new place to sell software in the future. Or maybe they should just hedge their bets.

The Bandito hears that Commodore has been hemorrhaging engineering staff lately. Not just the UNIX team, but even more staffers have headed for greener pastures. Some have jumped, others were pushed. Some went to CDTV group. Will there be anybody around to write software and design hardware? Does this mean that development of new products is going to slow down? If not, how does Commodore intend to get new products

out there? The Bandito hopes that the answers to these questions will become apparent in the near future.

If there's still any doubt in your mind about where the Amiga's future lies, let the Bandito remove it. Anyone who's attended an Amiga show recently can tell you: video is the key Amiga product. The majority of the product releases in the Amiga market, apart from games, are related to video usage. Video is where all the expensive product development is happening. Video represents the future of the Amiga. Video is the thing that will propel the Amiga into corporate America, if anything can, in the same way desktop publishing propelled the Macintosh; without DTP, the Mac would be an interesting footnote in computer history. Now, of course, people use the Mac for other things, but DTP was the application that made other applications possible.

If the Amiga is to become a hit after all this time, there are three paths: video, low-cost game machine, and CDTV. Video looks the strongest right now; the Amiga as a game machine is falling behind other platforms in performance; CDTV is struggling for sales. The game machine path needs better price performance; either lower the prices on the A500, or increase the performance—put in a faster 68000 or perhaps a 68030. CDTV can make it, but it's going to be a long struggle to lower

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the prices, get good software, and improve the hardware performance. So video looks like the easiest path to widespread success.

Eventually, the success of Amiga video could lead to a renaissance of Amiga software for other applications. Commodore needs to keep moving the technology ahead, though. Let's see standard 256 color, 8-bit graphics in 640 x 480 resolution, upgradable to 16 million colors (24 bits) on the motherboard. Offer higher resolution display options, too, though it's not as necessary. Ugun the blitter to handle all that graphics data with blazing speed; it shouldn't be any slower to move 24-bit data on the screen than it is to move 8-bit data. Add a DSP chip to create CD-quality sound. How about a built-in Fast, Wide SCSI interface, too? Pipeline the architecture to handle 32-bit throughput and DMA. Look into RISC for higher performance in the future. Keep the video orientation; add more video slots! Maybe if Commodore can keep the Amiga architecture moving, the Amiga can really expand its market.

The Bandito had predicted it a while ago, but it finally happened. Commodore has lowered the prices on the A2000 line, hoping for better sales in the critical Christmas season. The A2000C now lists for \$999 and the A2000HD/P lists for \$1299. It certainly is about time, says the Bandito. Of course, it would be better if

the prices were even lower, but let's not expect miracles here. Perhaps the price of some of the peripherals will drop in the near future. Now the next milestone is to get the price of the complete system with monitor and hard drive under \$1000. Here's one example of where the Amiga has conquered. The machine that Apple had once touted as an "Amiga-killer" will cease production this month and quietly fade away. Inside sources say that Apple stops producing the IIGS this month. That means the only remnant of the Apple II family is a IIe card for the Macintosh LC. Anybody remember the slogan "Apple II Forever"? Looks like the Amiga beat the pants off that little computer. Next up on

As increasing evidence of the relative importance of the European market to the U.S. market in Commodore's eyes, the Bandito offers this tidbit. Commodore has introduced the Amiga 500 Plus in the U.K. in October. Commodore U.S. refuses to even talk about it. But the Bandito has the scoop: the new machine has 1MB of Chip RAM, expandable to 2MB with an optional board, a real-time clock on the motherboard, and Workbench 2.0 in ROM. If you think you've spotted one, the motherboard is marked Rev. 8. So when will we see these in the U.S.? Your guess is as good as mine. If they had any sense, Commodore would move out existing inventory and get those new A500's into the U.S. as soon as possible.

Video Clips

NewTek is giving out free Video Toaster demo tapes; call their number (1-800-368-5441) and they'll send you one. They'll have to sell a lot of Toasters to make that offer a worthwhile expenditure of marketing dollars—but then, they probably will. [For light on NewTek's software upgrade and new pricing, see "...And Furthermore" and "Editorial Content," v. 6.12.—Ed.]

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the list is the Macintosh, which looks to be a tougher fight now that Apple has dropped their prices. The Macintosh LC will be getting a 68030 processor next year. So by that time, the A3000 should be priced less than the LC. You hear that, Commodore? And maybe you should drop a 68020 into the A2000; the parts cost would barely change. At least, how about a faster 68000? The 16MHz version is only a couple dollars more—if that. So why not?



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Amiga

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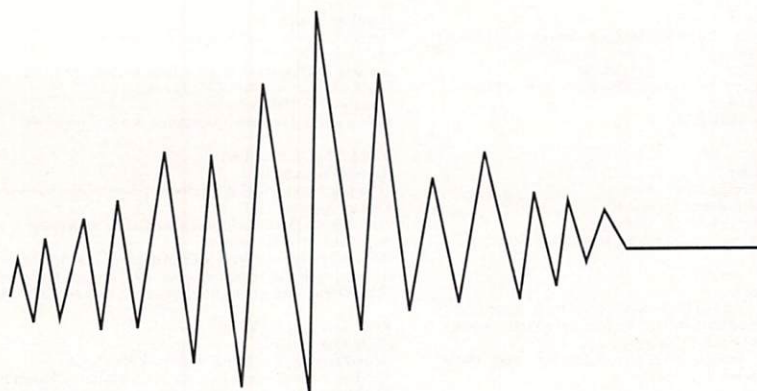
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Feedback

Eight Categories of Evaluation?

I was impressed with Paul Larrivée's review of *Teacher's Toolkit* in the October issue of *Amazing Computing*. Once again, however, I was left with the impression that this program would not be suitable for me. Last year, I purchased *E-Z Grade* after it was reviewed in your magazine, but found upon loading it that only four test categories were available. This limit was impossible to alter. I no longer use *E-Z Grade* and can't get a refund.

So, too, with *Teacher's Toolkit*. Larrivée mentions only four test categories: Homework, Classwork, Quizzes, and Tests. I need eight categories for the classes I teach! After all, if a program can have an unlimited number of grades, classes, and students, why can't it have more than four categories?

Perhaps you could clarify this.

Glenn Smith
Tilbury, Ontario

A spokesperson at TTR Development explained to us that, indeed, the number of test categories can be increased but that one would need to use an editor. It's not clear to us, Glenn, what the four additional categories could possibly be, for the present four appear broad enough to cover all types of evaluation possible by a teacher. Since Toolkit allows point weighting and category weighting, why not just add your own code to an evaluation item, such as under Classwork, enter Lab1-A for "Appearance" and Lab1-B for "Behavior"? You're free to weight each as you wish, as well as to make Classwork any percent of the total grade.—Ed.

Layout, Letters, Lauds, and Languages Examined

I congratulate the layout editors for their much improved page layout. No longer do I have to stare at huge blocks of empty space, having to fight the feeling that I've been ripped off. Thanks for at least bringing the form of your magazine up to an acceptable standard.

Now let's talk about content. I wholeheartedly like the way you make responsive comments to readers' letters in Feedback. The absence of any comments to letters is what I loathe in another Amiga-specific magazine. The way these editors print letters without comment gives me the impression that they imagine themselves gods atop Mt. Olympus. My only complaint with Feedback is that you don't comment on all letters. Thanks, anyway, for the mortal, personal touch.

Next, your New Products section is informative and valuable, but I would say that the text is written largely by the developers themselves. The descriptions are rife with superlative phrases, and yet nowhere do I see an AC disclaimer to the effect that the magazine is not supporting such claims. Without such a statement, phrases strongly imply that what you say about new products is the concrete opinion of the the magazine, based on actual use.

In your programming sections, how about something I can really use—rather than tidbits on the finer points of exotic languages, as in the

APL section? Why don't you print an ARexx program to automate *The Art Department Pro*? What about publishing sample ARexx programs for all Amiga programs that allow some use of ARexx? How about listing all ARexx-able programs available? Please, give me something I can use!

At any rate, I've enjoyed your magazine over the years. I hope that you will find what criticism I've leveled here as constructive. It's intended that way.

John W. Covington III
Thunderbolt, GA

It's through letters like yours, John, that help us determine what's on readers' minds. Some letters in "Feedback" don't require a response as they appear to stand by themselves. Our New Products section is probably the most comprehensive such section in any magazine, overlooking very few, if any, new products, and our editor would be hard-pressed to verify all information coming from producers. However, we'll be vigilant in trapping and eliminating apparently exaggerated claims. Thanks, too, for the suggestions on ARexx, which we are presenting to the editorial staff for consideration. In articles on programming, we strive to have something for every programming taste.—Ed.

Wish List Granted

Karen Pringle's wish list ("Feedback," 6.8) includes this item "...automatically print all the odd-numbered pages of a document, then turn them over and print all the even-numbered pages on the back."

Bingo! I have written a C program

for the Amiga which does exactly this. I call it the PAGER. The code is 147 lines long, which include 34 comment lines. It is a public domain program, which I sent to Anders Bjerin in Sweden earlier this year.

I'm a retired programmer with more than 30 years experience for two major corporations in Connecticut. My previous public domain programs include TARTAN on Amicus 26, and BREF on Fred Fish 283 and 494.

Dick Taylor
99 Valley View Rd.
Glastonbury, CT 06033

Since writing this letter, Dick has generously offered to supply anyone with a copy of PAGER. Please send him a formatted disk with a self-addressed, stamped mailer. Thank you very much, Dick.—Ed.

A1000 Owners of the World, Unite!

I was, to say the least, very happy to read Mr. Hicks's editorial concerning uniting A1000 owners. I have owned my A1000 since October 1985 and have made quite a sizable investment in hardware specific to the 1000. My machine is one-hundred percent V2.0 and ECS compatible, so I have no intention of upgrading soon.

I'm not alone in sticking with the A1000. If Amiga vendors and CBM would listen to the rank and file community, they'd find a surprising number of 1000's still in use. What does it take to convince people to support our machine? There is still much that could be developed for the 1000; the Rejuvenator is an example. The reason that we're being told that the 1000 is obsolete is that most Amiga vendors and CBM believe that there's nothing more to be gained by supporting the machine. They should take a closer look, for they might be surprised!

Don't get me wrong; I think the A3000 and the Toaster are the flagship machines. But since the A1000 is about 95% compatible with software for the Amiga line, I can't see a reason for its lack of support. I sent in my reader survey card the same day I received my issue of AC. Thank you, Don Hicks, for helping frustrated A1000 owners have a voice.

Richard B. Erickson
Burnsville, MN

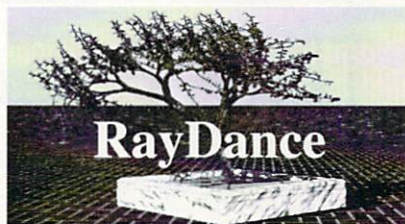
Watch for the results of our survey of A1000 owners in an upcoming "Feedback." —Ed.

Amiga's Nature?

I recently called Electronic Arts Technical Support to discuss a problem I've been having with *DeluxePaint* release 4.0. I've seen this complaint on BBSs, so I know it's not unique to my system even though EA claims it is. In a nutshell, *DPaintIV* has an annoying habit of occasionally shutting down *Workbench*, even when a program is running there. *DPaint's* "Prefs" menu continues to indicate with a checkmark that *Workbench* is open, but selecting "Workbench" on this menu returns the error message "Can't close *Workbench*." Other programs running on their own custom screens are still there, but *Workbench* has vanished, never to return.

I'm using an A500 with 4.5MB of RAM, a 1MB chip RAM, and two floppies. I've encountered this problem with as little running as *Scribble!* on the *Workbench* with a four-color, interlaced, standard overscan window open in *DPaint*. Having described my setup and the problem to an EA rep, he first suggested that I was probably low on memory. When I found this unlikely, he dropped his bombshell: "It is Electronics Arts' policy that, due to the notoriously unstable nature of the Amiga's multitasking operating system, no attempts should be made to run any other programs simultaneously with our programs."

I was appalled! Does this include other EA products like *Deluxe Video III*? Background tasks like *ARExx*? On all counts, the rep said their use was not recommended. He suggested that I use *DPaint IV* as my bootstrap system disk, and run *DPaint IV* only, to determine if this cleared up the problem!



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Circle 137 on Reader Service card.

Had I been a new Amiga owner, I'm sure I would have been convinced that I'd made a serious error in my choice of computers.

Rob Bryanton
Regina, Saskatchewan

That indeed sounds like appalling news, Rob. We're sending copies of your letter to Jeff Sherb, CBM vice president for applications and technical services, and to Jim Reader, CBM vice president for customer satisfaction, to try to generate some sort of reaction.—Ed.

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Att: Feedback

Readers whose letters are published will receive five public domain disks free of charge.

•AC•

The Fred Fish Collection

Below is a listing of the latest additions to the Fred Fish Collection. This expanding library of freely redistributable software is the work of Amiga pioneer and award-winning software anthologist, Fred Fish. For a complete list of all AC, AMICUS, and Fred Fish Disks, cataloged and cross-referenced for your convenience, please consult the current *AC's Guide To The Commodore Amiga* available at your local Amazing Dealer.

FredFishDisk540

Browser A "Programmer's Workbench". Allows you to easily and conveniently move, copy, rename, and delete files & directories from a CL environment. Also provides a method to execute either Workbench or CL programs by double-clicking them or by selecting them from a ParM-like menu with lots of arguments. A Browser 1.6 replacement, does everything Browser 1.6 does and a lot more. Version 1.0, includes source in C. Author: Sylvain Rouger, Pierre Carrette.

CLiEke An XIcon-style program which uses parM library. It allows you to execute a script starting from WB and is completely CLi compatible, because it is a CLi. Can use a real scriptfile or take commands in its own TOOLTYPES. Includes source in C. Version 1.0. Author: Sylvain Rouger.

ParM Parameter Menu. ParM allows you to build menus to run whatever program you have on disk. ParM can run programs either in Workbench or CL mode. This is an alternative to MyMenu which can run only when workbench is loaded. ParM can have its own little window, can attach menus to the CL window you are running from, or to the WB menu, just like MyMenu. This is version 3.00, an update to version 2.5r on disk 419. Includes source in C. Author: Sylvain Rouger, Pierre Carrette.

PatchReq A patch for system requests and a file requester. Replace a file requester with the great req library file requester. Patches AutoRequest() for requests to appear under the mouse and more. Version 1.4. Includes source in C. Authors: Sylvain Rouger, Pierre Carrette.

Req An enhanced version of the interface to req library for Amiga 5.0. Pragmas supplied and glue put in a library rather than in an object file. Includes source in asm. Version 1.1. Author: Pierre Carrette.

SANA Release 2 of the Standard Amiga Network Architecture device driver specification. This is a specification for the device driver level only. Author: Raymond Brand, Martin Hunt, Perry Kivowitz.

SetColors A palette replacement program that does a lot more than only 3K. Can save and load color files, and update preferences. Update to version on disk 419, with bugfix. Includes source in C. Author: Pierre Carrette.

WBRun A RunBack-style program which uses parM library. Runs programs in WB mode from many CL programs. Programs are fully detached. The program you run must support WBStartup. Not related to WBRun on disk 43. Includes source in C. Authors: Sylvain Rouger, Pierre Carrette.

FredFishDisk541

4D Two programs for visualizing four-dimensional objects. The Tesseraet program displays three-dimensional objects of a hyper-cube (tesseract), a hyper-octahedron or a hyper-tetrahedron. These can be rotated in three and four dimensions. The 4D Navigator program moves you through the three-dimensional surface of a four-dimensional sphere. Version 1.1 for both. Binary only. Source available from author. Author: Jerry D. Hedden.

GIFMachine A program that will convert CompuServe GIF image files into IFF SHAM and 24-bit ILMs. It offers a number of extra options like dithering, horizontal and vertical flip, as well as automatic border removal. Requires KickStart version 2.0 or greater to run. This is version 2.137, an update to version 2.116 on disk 458. Includes source. Author: Christopher Wchura.

Llamatron A fast action, arcade style game, guaranteed to have your FILE button finger dangling off the tendons. Hours of fun for you, blowing away hordes after hordes of alien fiends. Shareware, binary only. Author: Jeff Minter.

MineClearer Amiga version of the Minesweeper program under Windows 3.0. You are the captain of a ship and you have to clear the sea from mines. Shareware, version 1.0c, binary only. Author: Kopeitzy Theodor.

Steal A program that grabs parts out of a display. It is used to grab parts from intuition's structures, such as gadgets, menus, and screens. Version 1.1, includes source. Author: Rick van Rein.

Thinkamania Playable demo version of a game like the legendary memory game. Includes superb graphics and sound effects. Version 2.1, binary only. Author: Th. Schwoeppe/D. Respondek of U.L.U. Software.

FredFishDisk542

BootX Yet another virus killer. BootX can check the bootblock of a disk, check memory for any resident viruses, and scan a disk for link viruses. It can load bootblock libraries for you to write on your disks as an alternative for the boring DOS install bootblock. It can load brain files so you can add any new bootblocks that BootX does not yet recognize. BootX is written completely in assembly for maximum speed and minimum size. Fully supports AmigaDOS 2.0. Version 3.30d, an update to version 3.40 on disk 420. Binary only. Author: Peter Shuer.

ChemMate A program to make animations of chemical reactions with the purpose of recording to a video tape. It is a programming language, containing expressions, nested loops, etc. It can handle molecules with in total up to 64 atoms, and lines between atoms. Works correctly under PAL. Version 0.8, examples and source (in DICEC) included. Author: Klaas van Gend.

PowerSnap A utility that allows you to use the mouse to mark characters anywhere on the screen, and then paste them somewhere else, such as in another CL or in a string gadget. Checks what font is used in the window you snap from and will look for the position of the characters automatically. Recognizes all non-proportional fonts up to 24 pixels wide and of any height. Works with AmigaDOS 2.0 in both shell and Workbench environments. This is version 1.1, an update to version 1.0 on disk 467. Binary only. Author: Nico Francois.

PP

PowerPacker A small tool that patches the DOS library so that PowerPacker files will start loading as if they were "normal" files. Sample use of PP would be to crunch all "info" files. The icons will retain their functionality as when PP is installed, and WB will never know the difference. Icons are useful, but take up a lot of valuable disk space. You may also use any text viewer, editor or IFF tool (or anything!) you desire directly on PowerPacker files! This is version 1.3, an update to version 1.0 on disk 515. Shareware, includes full source. Author: Michael Berg.

PPAnim

An animation player for normal IFF ANIMopt 5 (DPaintIII...) files or ANIM files crunched with PowerPacker. The de-crunching is done automatically as the file is read. Features many command line options, palette change during animation, full overscan PAL/NTSC support and yet it is only 7K. Compatible with AmigaDOS 2.0. Some new 2 features (AsI requester) supported. Version 1.0a, an update to version 1.0 on disk 414. Binary only. Author: Nico Francois.

PPLoadSeg

This program patches the loadseg routine to automatically recognize files crunched with PowerPacker. After running PPLoadSeg crunched libraries and devices are still recognized by AmigaDOS. You can even crunch fonts and use them as normally. Version 1.0, binary only. Author: Nico Francois.

PPMore

A more "replacement" program that reads normal ASCII text files as well as files crunched with PowerPacker. The crunched files can result in considerable disk space savings. This is version 1.8, an update to version 1.7 on disk 371. Enhancements include a Workbench 2.03 disk under 1.3 and support for the AsI requester under 2.0. Binary only. Author: Nico Francois.

PPShow

A "show" program for normal IFF ILM files or ILM files crunched with PowerPacker. The de-crunching is done automatically as the file is read. Version 1.2a, update to version 1.2 on disk 371. Binary only. Author: Nico Francois.

PPTYPE

A "print" program that will print normal ASCII files or files crunched with PowerPacker. Several nice features such as page headers and numbers, adjustable tab sizes, page info taken from preferences and more. Version 1.1a, update to version 1.0 on disk 371. Binary only. Author: Nico Francois.

RemapInfo

An icon color remapping tool that swaps the colors black and white. The program runs on 1.3, but when run on 2.0 it supports the AppleLink feature. It allows you to drag all icons you wish to remap on RemapInfo's AppleLink to remap them. Version 1.0, binary only. Author: Nico Francois.

Selector

A program that helps you assemble programs on a boot disk and start them in a user friendly way by putting up a window with gadgets to launch programs. Version 3.0, update to version 2.5 on disk 302. Binary only. Author: Nico Francois.

TheGuru

A program every Amigant should have. Puts the gun back in KickStart 2.0. A comeback you will not want to miss. New features include support for virtual and public screens, editing of phones and full gadgets to replace. Version 2.0, an update to version 1.0 on disk 378. Requires AmigaDOS 2.0. Binary only. Author: Nico Francois.

VCLi

Voice Command Line Interface (VCLi) is an Amiga voice recognition program that learns and recognizes a set of voice commands. Each voice command is associated with an Amiga CL command that is executed when an incoming voice command is received. VCLi allows the execution of any Amiga CL command by voice. Requires the Perfect Sound 3 audio digitizer. This is version 2.0 of VCLi which offers improved performance, improved operability, and improved graphics for voiceprint display. Binary only. Author: Richard Horne.

FredFishDisk543

AudioScope A real-time audio spectrum analyzer for the Amiga. Use AudioScope to examine the frequency spectrum of any audio signal received through the PerfectSound 3 audio digitizer. Due to the heavy computational load, an accelerated Amiga is recommended. Binary only. Author: Richard Horne.

Badger

Reminder program for your startup sequence. Badger will open a window and display any important events that are "due". Badger will not bother you if there is nothing to report. Events are entered via menus and prompts. This is version 2.05a, an update to version 2.01 on disk 432. Includes many new features such as event editing and automatic holiday notification. Shareware, binary only. Author: George Kerber.

ColorGatch

A utility that lets you grab colors from a screen and save them as an executable file. This is version 2.0, an update to version 1.0 on disk 396. Includes source in assembler. Author: Preben Nielsen.

Day2Day

A small program which can calculate the number of days between two dates. Very useful, if for example, you want to know how many days you have been alive. This is version 1.0, includes source in assembler. Author: Preben Nielsen.

MouseXY

A small utility that shows the mouse coordinates and the color at that position. It can be moved from screen to screen (automatically evacuates any closing screen). It is able to show coordinates even when you are moving resizing windows or moving Workbench icons. This is version 1.1, an update to version 1.0 on disk 463. Includes source in assembler. Author: Preben Nielsen.

PictSaver

A small utility that allows you to cut rectangular portions of any screen and store them on disk as IFF-ILM files. Also allows easy saving of windows and entire screens to disk. This is version 2.0, an update to PictSaver version 1.0 on disk 494. Includes source in assembler. Author: Preben Nielsen.

PRreader

An all purpose reader that displays text, pictures, sounds, and animations, all of which may be compressed or compressed with a companion compression program (not included). Text can include embedded static or animated illustrations and sounds. Version 5.1, freeware, binary only. Author: Chas A. Wyndham.

Spectrogram

Amiga Spectrogram computes a frequency analysis of any 8 bit audio data file and creates a high resolution color display showing frequency content versus time. Display color is continuously adjustable. This type of display when applied to the human voice has been called a voiceprint. This technique has also been used to analyze sounds of many kinds of animals including birds, dolphins, whales, etc. The audio data file can be played at any desired rate, giving a simultaneous audio and visual representation of the sample. A selection of interesting audio samples for analysis by Amiga Spectrogram is included. Version 6.3, binary only. Author: Richard Horne.

TD

A program like Track Display on disk 399 by Oul Bahr. It monitors and displays the current track for each floppy disk connected to the Amiga. This is version 2.0, an update to version 1.0 on disk 483. Includes source in assembler. Author: Preben Nielsen.

WBplane

Two very small tools to change the depth of the Workbench screen. AddWBplane adds a biplane. SubWBplane subtracts a biplane. Both can be run from both CL and Workbench. This is version 1.0, includes source in assembler. Author: Preben Nielsen.

FredFishDisk544

AWP This program animates any wait/pause like the one in Workbench 2.0. It installs a vertical blank interrupt to minimize CPU usage and is written 100% in assembler for maximum efficiency. It uses two hands for the clock, like it should be, and has nine different user-selectable speeds. Requires AmigaDOS 2.0. Version 1.0, binary only. Author: Daman Cox.

EraseDisk

Asmal, last program used to erase a disk by setting all bits on the disk to zero. Version 0.68, includes source in assembler. Author: Otto Bernhart.

LanderGame

Lander 3D is an X-Specs 3D Lunar Lander game. Maneuver your landing craft over a three dimensional fractal lunar landscape searching for a safe place to land. Watch your fuel, altitude, and slope of the surface beneath you. Fly your craft over, around, and behind the lunar peaks. Digitized sound. Two alternate lunar scenery files included. Requires X-Specs 3D spaces. Spectacular. Binary only. Author: Richard Horne.

RaiderGame

Raider 3D is a classic space strategy game for X-Specs 3D. Search for enemy on a 3D map of the galaxy. Warp transport to trouble spots and protect the Federation bases. Blast the enemy with your energy torpedoes. But watch your own energy reserves since you are the last hope of the galaxy. Digitized sound. Amazing 3D action. Requires X-Specs 3D spaces. Binary only. Author: Richard Horne.

TurboGIF

Demo version of a very fast GIF viewer, that is three to fifteen times faster than similar programs. Currently TurboGIF produces very high resolution black and white images only. Makes an excellent "GIF previewer" to decide if a particular GIF is worth spending the time converting with one of the other converters. Shareware, version 1.0, binary only. Author: Steve Borden.

ZScroll

A short program which scrolls ASCII text files in a small window on your Workbench screen. Includes both English and German versions. Version 1.0, includes source. Author: Mark Zieindler.

FredFishDisk545

DrawMap Release 3.1 of a program for drawing representations of the Earth's surface. This release generates maps in a combination of 16 colors with full user palette control, larger mapfiles with automatic boundaries, faster generation of box and globe views, an improved online help facility, provision for saving and printing displays, and general lightening of the source code. Accelerated version requiring 68020 CPU and 68881 FPU also provided. Full source code included. Requires 1.2 megabytes of memory. Update to version 2.25d on disk 485. Author: Bryan Brown.

FredFishDisk546

ZView ZView is a ILM picture viewer for use under Workbench 2.0. It supports all standard Amiga graphics modes, ARev, and both the CL and Workbench. A list of files to display can be used, or each filename can be given individually. Each picture that is displayed can be shown for a specified amount of time, or until the user clicks on the left mouse button. Version 1.11, includes source. Author: Dave Schreiber.

Budget

A program to help with managing personal finances. Version 1.3.3, an update to version 1.302 on disk 452. Binary only. Author: Le Lay Serge Camille.

DiskPrint

Prints disk labels for 3.5" and 5.25" disks, primarily for FD library disks, with the ability to create, handle, load and save label library files so labels for most FD disks are available after a few mouseclicks. Features include different label sizes, library files, directory-read-in, direct disk contents read-in, label library functions and printing labels for a whole series of disks in one turn. Works fine with every printer connected to the parallel port. This is version 3.1.2, an update to version 2.7.2 on disk 461. Shareware, binary only. Author: Jan Gessler.

DSound

DSound is 8SVX sound sample player that plays samples directly off the hard drive. The sound sample is played as it is loaded, making it possible to play sound samples of any length even under limited memory conditions. Version 0.91a, includes source. Author: Dave Schreiber.

Icons

Two collections of high-quality, consistently designed icons for the Amiga Workbench. The color collections will require an Ecolor Workbench (i.e. Workbench 2.0). The black and white collections are useable on any normal 4.0 Workbench. One set of icons is based on the icons supplied with the GEM windowing system, and the other set is modeled after the icons on a Silicon Graphics Personal Iris. A bonus set of ray-traced icons is included. Author: Kenneth Jennings.

WBLink

WBLink corrects a deficiency in Workbench 2.0: the inability to create links to files and directories from Workbench. WBLink puts an 'AppIcon' on the Workbench screen that makes a link to a file or directory that is dropped on it. For Workbench 2.0 or later. Version 1.00, includes source. Author: Dave Schreiber.

FredFishDisk547

EasyExpress A compiler tool for the users of Charlie Gibbs' A68k assembler and The Software Distillery's BLK. EasyExpress does the same job better than your batch file and is much easier to change for current use. If you use many object files, EasyExpress can make your life much easier. You can do almost everything via mouse and just watch how easily the compilation of your program happens. Binary only. Author: Juha Lindfors.

FindName

A program to be used in scripts. It allows you to verify the presence of certain structures in RAM. You can currently search for devices, libraries, memory, message ports, resources and tasks. The search done by name. Version 1.0, includes source in assembler. Author: Preben Nielsen.

MMSHift

A program that lets you use the middle mouse button (MMB) (on a three-button mouse) as a SHIFT-key when selecting multiple icons on the Workbench. Only uses 166 bytes of memory. Version 1.0, includes source in assembler. Author: Preben Nielsen.

PowerSource

A program for creating and editing intuition gadgets and menus. Previously known as GadGET (disk 475). Includes a palette editor, generation of either C or assembly source, and binary saving for later loading and editing. This is version 3.0, includes source. Author: Jan van den Baard.

RMBShift

A program that lets you use the right mouse button (RMB) as a SHIFT-key when selecting multiple icons on the Workbench. Only uses 174 bytes of memory. Version 1.0, includes source in assembler. Author: Preben Nielsen.

VideoMaxe

Both program and documentation are in German, no English version at this time. Version 3.00, binary only. Author: Stephan Surken.

View

A text display with many controls and features including search, file requests, jump to editor etc. This is version 1.3, an update to version 1.0 on disk 504. Includes source. Author: Jan van den Baard.

FredFishDisk548

FreePaint A freely redistributable painting program, much like the popular Paint program. Version 352, binary only. Author: Stefan G. Boldorf.

LabelMaker

Allows you to create fancy, full-sized, colored labels for 3.5" floppy disks. Version 1.5, includes source. Author: Stefan G. Boldorf.

MambaMove

A game with the goal of moving an apple eating snake inside four walls until an exit appears. Includes source. Author: Stefan G. Boldorf.

Multinstall

A script driven program for the installation of larger program packages. Executes CL like script files in simple language. Version 1.0, includes source. Author: Stefan G. Boldorf.

SandGlass

Only for animation the original Workbench busy pointer. Only for Workbench Kickstart update version 1.3. Version 1.0, includes source. Author: Dirk Riemann.

TG

No system without a graphical user interface is complete without an "Eyes" program. Includes source. Author: Thomas Geib.

FredFishDisk549

Bugs Another game program. Be careful! It may destroy graphics, but nothing else! Can be stopped by pressing the freubutton of a joystick on port 1. Includes source in Modula II. Author: Robert Brandner.

FFEX

Another program for fractals. Lots of features. Uses an interesting algorithm for extra speed. Source includes modules for reading/writing ILM pictures, and for using the ARPL requester in modula. Version 4.0. Author: Robert Brandner.

FontList

Prints a list of the fonts in the FONTS; device to the printer. Prints name, available sizes and some text using the specified font. Includes source in Modula II. Author: Robert Brandner.

M2Icons

New icons for the M2Amiga System. Includes a script for easy installation. Author: Robert Brandner.

MouseMagic

A little game program. Can be stopped by closing its window. Includes source in Modula II. Author: Robert Brandner.

Reversi

Version of the well known game. Features an intelligent computer opponent. Includes source in Modula II. Author: Robert Brandner.

VersaWise

Another program for fractals. Lots of features. Uses an interesting algorithm for extra speed. Source includes modules for reading/writing ILM pictures, and for using the ARPL requester in modula. Version 4.0. Author: Robert Brandner.

FredFishDisk550

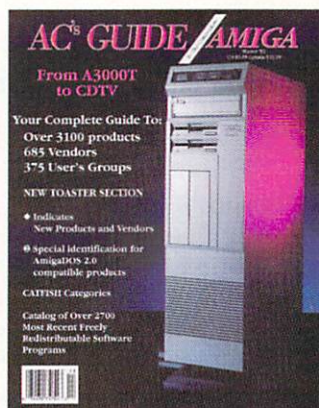
BeBoP Demostration version of the commercial game BeBoP N-Drop. BeBoP N-Drop is a real-time graphical arcade puzzle game, a greatly enhanced version of the popular shareware game BeBoP O-Matic. The object is to fit the falling pieces together in a way as to form complete horizontal rows, which will then disappear off the board. BeBoP N-Drop contains 77 different levels of play, each with a different shape board. The game contains over 800 different playing pieces, more than 4500 of digitized sound effects, and an interesting visual effects. Binary only. Author: Wayne Phillips.

ICalc

An expression calculator with many powerful features, including user-defined functions and variables, many built-in functions, scripts, and special looping constructs. Handles expressions involving both real and complex numbers. This is version 1.1, an update to version 1.0 on disk 472. Includes source. Author: Martin Scott.

FredFishDisk551	ARIM	Amiga Real Time Monitor displays and controls system activity such as tasks, windows, libraries, devices, resources, ports, readwrits, interrupts, vectors, memory, mounts, assigns, locks, fonts, hardware, and more. This is version 1.3, an update to version 1.0 on disk 527. Shareware, binary only. Author: Dietmar Jansen and F. J. Mertens
CWeb		A programming tool that allows you to program top down by splitting your program into many small, and understandable modules which tangle into a complex understandable file. By applying twice to the program you can produce a pretty printed listing for processing with TeX. This is version 2.0, includes source. Author: Donald Knuth, Silvio Levy, port by Carsten Steger
ToolManager		ToolManager is a full featured program to add programs (either WorkBench or CLI) to the tools menu of the 2.x WorkBench. Programs can be added by dragging their icons onto the ToolManager "config" window or the optional ToolManager icon by editing the config file. Requires WorkBench 2.0. This is version 1.5, an update to version 1.4 on disk 527. Includes source. Author: Stefan Becker
WBGauge		Utility to patch AmigaOS 2.0 to bring back the little gauge in the left border of disk windows, showing the ratio of available space on the disk. Version 1.2, an update to version 1.0 on disk 417. Binary only. Author: Jean-Michel Forgas
FredFishDisk552	GNUPlot	An interactive function and data plotting program which supports a great number of output devices. Includes extensive on-line help. This is version 3.0, an update to version 2.0 on disk 526. New features include support for surfaces, more flexible data file handling, unified PostScript support, and more. Includes source. Author: Thomas Williams, Colin Kelley, et al.
TaskPh		A small CLI command that allows you to set task priorities from the command line. Useful for startup sequence. AmigaDOS 1.3 and 2.0 compatible. Includes C source. Author: Steve Anderson
TSFSuite		A suite of programs to allow use of a Teac SCSI Floppy on the Amiga. Includes programs to set the mode to 1.2 or 4 Meg [TSFMM], to format to 1.2 or 4 Meg [TSFFX], a utility that does disk changes for you [TSFAD], and a SCSI exerciser to explore the controllers on the SCSI bus. Source is available upon request. Author: Harvey Taylor
FredFishDisk553	24BitTools	Three conversion programs to manipulate 24-bit images. IF24To8 converts 24-bit IF images to 8-bit IF images. Pro2BMP converts 24-bit 3D Professional format images into 24-bit BMP files that Microsoft Windows can understand. And Pro2F converts 24-bit 3D Professional format images into the more useful 24-bit IF format. Includes source. Author: Dallas Hodgson
AddMenu		A program to add a number of menus to the Tools menu on WorkBench V2.0. Uses the correct WorkBench library calls and allows updating from CLI or from within the menu itself, meaning infinite number of functions. Version 1.54, update to V1.50 on disk 501. Binary only, source available from author. Author: Nic Wilson
AutoCLI		A PopCLI type replacement that works with WorkBench 2.0 and fully controls AmigaOS 3.0 accelerators boards. Always wins the default path and stack, and current directory. Can automatically open CLI/Shell windows to pixel level than screen size on opening. New functions include spline pattern-ing on blanking, more function keys, mouse activated screen shuffle, close gadgets on Shell windows and more as many users have requested. Version 1.99n, an update to version 1.99d on disk 501. Binary only. Author: Nic Wilson
FAFF		Specialization for the FAFF spreadsheet format used by the Gold Disk products "Professional Calc", "The Advantage", "Office Calc" and "Office Graph". Describes version 2.0 of FAFF. This information should allow 3rd party developers to create and use files that are compatible with ProCalc. Author: Michal Todorovic/Gold Disk
RoadRoute		A program that determines from a user modifiable data base, the shortest and fastest routes between two cities. This is a German version of the distribution on disk 504, with 2641 German cities (towns, hamlets, etc) and 5555 connecting roads. Requires 1 Mb. Binary only. Author: Jim Butterfield, Gunter Kirchbach
SysInfo		A program which reports interesting information about the configuration of your machine, including some speed comparisons with other configurations, versions of the OS software, etc. This program has been very popular with many users around the world and has been fully updated to include many new functions as requested by users. This is version 2.40, an update to version 2.22 on disk 502. Binary only. Author: Nic Wilson
FredFishDisk554	Amastermind	A mastermind type game written in AMOS and compiled so that it can be run from workbench. Fully mouse and menu driven. Features choice of 6 to 10 colors with 4 to 8 holes. This is version 1.1, shareware, binary only. Full source available from author. Author: Andrew Kreibich
IFSgen		Anterated Function System generator. Generates pictures of ferns, trees, galaxies, snowflakes and many others using IFS codes (a type of fractal). Features full mouse control of the functions which define the picture. Just point the mouse at one of the parts of the shape and drag it around the screen. Fully menu driven, with the ability to load and save IFF pictures and the codes that generate them. Fine tune codes and move them around the screen, zoom in and out and much more. Lots of example files. Written in AMOS and compiled so that you can run it from WorkBench. Version 2.1 shareware version with saves disabled, binary only. Requires 1 Mb of memory or more. Full source code available when you register. Author: Andrew Kreibich
Landmine		A game of logic. A number of landmines are buried in the playing field and you need to work out where they are, avoid them, and clear the rest of the field to get maximum points and advance to the next level. Written in compiled AMOS, requires 1 Mb of memory or more. This is version 1.0, shareware, binary only. Full source available from author. Author: Perry Rosenberg
Landscape		A fractal scenery generator written in AMOS and compiled so that it can be run from workbench. Features many user adjustable parameters such as height, sea, tree and snow levels, beaches, lighting angles, and palette. 2D contour

Where else can you find a complete listing of all the Fred Fish Disks?



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Scheme2C	A Scheme compiler which accepts the language defined in the essential portions of Revised Report on Algorithmic Language Scheme, with minor constraints and some additions. The compiler produces C source files which are then compiled using the system's C compiler (Lattice C 5.10 on the Amiga) to produce conventional object and executable files. Because of the size of the distribution, it has been split into three disks as follows: source and documentation archives on 556, M68000 binary archive on 557, and M68020 binary archive on 558. This Amiga port was done by Mike Meyer, based on the 28-Sep-90 version of the translator. Author: Digital Equipment Corporation	
VirusChecker	A virus checker that can check memory, disk bootblocks, and disk files for signs of most known viruses. Can remember nonstandard bootblocks that you indicate are OK and not bother you about them again. Includes an ARexx port. Version 5.30, binary only. Author: John Veldhuis	
FredFishDisk555	AutoCentre Utility for AmigaDOS 2.0 that will automatically center any new screens that are opened. This is especially useful when you have an overscanned WorkBench screen under 2.0 but find that a lot of applications still open on a 4.0 wide screen. This is a German version of the distribution on disk 504. With this program, these screens will be centered as they are opened. Version 1.2, binary only. Author: Colin Bell	
DPatch	This program allows you to change the default overscan sizes used in DeluxePaint 3.25 & 4.02. This is especially useful for loading in old animations created with DPaint 3.14 and animations created in other programs whose screen sizes do not match the default DPaint sizes. Author: Colin Bell	
Scheme2C	A Scheme compiler which accepts the language defined in the essential portions of Revised Report on Algorithmic Language Scheme, with minor constraints and some additions. The compiler produces C source files which are then compiled using the system's C compiler (Lattice C 5.10 on the Amiga) to produce conventional object and executable files. Because of the size of the distribution, it has been split into three disks as follows: source and documentation archives on 556, M68000 binary archive on 557, and M68020 binary archive on 558. This Amiga port was done by Mike Meyer, based on the 28-Sep-90 version of the translator. Author: Digital Equipment Corporation	
WarpSpeed	A program that will present you with an animated view out the window at a vehicle moving at WarpSpeed. This program was developed as a C language learning tool by the author. Version 1.0, includes all source. Author: Doug Petersak	
FredFishDisk558	BTNape A "Better Than Nothing" SCSI tape device handler. Provides flat file access to a SCSI tape drive from application programs using simple DOS calls to Read() and Write(). It can also be used with the Amiga TAPI utility for disk backups. Requires a "SCSI-2" compatible SCSI adapter. This is version 2.1, an update to version 2.0 on disk 471. It fixes a number of bugs, and includes some new features such as appending files to existing tapes. Includes source. Author: Robert Rethemeyer	
DisDF	Program to disable DF0-DFS to stop that empty drive clicking by putting the track disk device tasks in a reserved state. Can be run from CLI, startup script or WB. Command line options select drives and also remove the File System status to reduce CPU load a little more. This is version 1.1, an update to version 1.0 on disk 531. Includes source. Author: Patrick F. Mistell	
FredFishDisk560	BootX An easy to use boot, file and link virus killer with a KickStart 2.0 look (even under KickStart 1.3). Has lots of options to detect and kill Amiga viruses. Version 4.02, an update to version 3.80d on disk 542. Binary only. Author: Peter Stuer	
Liamatron	A fast, original rendering of the eighties "Robotron" by Williams. It features over 100 levels, sampled sound, single player mode, 2 player team and individual modes, droid-sidekick modes, 2 joystick console mode, dozens of	
	different, weird enemies and an abstract sense of humor. Includes two versions, a 512K version and a 1 Mb version with better samples. This is version 1.0, an update to the copy on disk 541, which was also version 1.0, but was missing the 512K version file. Shareware, binary only. Author: Jeff Minter	
MuchMore	Another program like "more", "less", "pg", etc. This one uses its own screen to show the text using a slow scroll. Includes built-in help, commands to search for text, and commands to print the text. Works with PAL or NTSC, in normal or overscan modes. Supports 4 color text in bold, italic, underlined, or inverse fonts. Version 3.0, this is an update to version 2.7 from disk 378. Includes source in Oberon or assembly code. Author: Fridtjof Siebert	
STScan	Utility program for using a Siemens ST 400 SCSI flatbed scanner with the Amiga. Can be adapted to other scanners and serves as an example of SCSI direct access to SCSI devices. Version 1.0, includes source in C. Author: Frank-Christian Kruegel	
ToBe Continued.....		
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And furthermore...

Judith Geffer: Computographer

by Timothy Duarte



Photojournalist Judith Geffer is reaching new heights with the Amiga. She combines photography, video, and the Amiga computer to produce an interesting form of art. Her avant garde photographic work, along with that of another artist, Lawrence Gartell, will be on display at the Neikrug Gallery in New York City from November 21 - February 1, 1992.

Her work drew critical attention when she dropped off her portfolio at the Museum of Modern Art. Not expecting a sudden reaction, she was surprised to be contacted by the director of photography, who wanted to know how she had produced her work. He was told that the computer will change the world of photography, but had seen no evidence until he came upon Judith's work.

So how is she changing the world? It all began when Judith became interested in Amiga computers. She began computer painting with Electronic Art's *DeluxePaint*. Using a fine color negative film, she took a picture of her monitor screen. A 20" x 30" color print of a painting was sold to Barnett Bank, one of the largest banks in Florida.

Trying to apply this new tool to her work, Judith acquired NewTek's *Digi-View*, a program that allowed her to turn a video camera on live subjects. Judith worked with 60 subjects and created hundreds of images. She experimented with vertical slivers of information, in 20-second timeframes. She discovered that multiple exposures of the subject were possible. Every second of information is different and the 20 seconds needed to cross the screen sends various artistic

ideas into that frame. Still, this was all in black and white. Striving for color, she now uses Digital Creations' DCTV for colorizing images. The transparent modes, stencils, and gradations are useful in altering the images and then producing a desired result.

"This is not alien to the work I've always done," claims Geffer. "Every era of visual arts history is defined by evolving tools. There is an identifiable nuance about how images look. I utilize the computer's magical properties for original ways to think and to photograph."

When asked about the Amiga, Judith had nothing but praises. She's aware that the Macintosh offers better resolution, but it's too rigid and expensive. She claims that the *DMI Resolver* may improve Amiga resolution and change the state of affairs in this area. "The Amiga allows you to make mistakes, which is the artist's fodder that fertilizes ideas."

Originally from New York, Judith Geffer has made Jacksonville, FL, her home for many years.



Top right: Self-portrait of the artist.

Above and below: Samples of Judith's computography.



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☐ 7. 18-24 ☐ 10. 50-64
☐ 8. 25-34 ☐ 11. 65 or over

- C. How many adults/children (under 18) are in your household?
☐ 12. _____ adults _____ male _____ female
☐ 13. _____ children _____ male _____ female

- D. How many of those use your/the family's Amiga(s)?
☐ 14. _____ adults _____ male _____ female
☐ 15. _____ children _____ male _____ female

- E. Which of the following do you now own?
 (please check all that apply)
☐ 16. Amiga 3000 ☐ 19. Amiga 1000
☐ 17. Amiga 2500 ☐ 20. Amiga 500
☐ 18. Amiga 2000 ☐ 21. do not own an Amiga

- F. If none of the above, which do you plan to buy soon?
☐ 22. Amiga 3000 ☐ 24. Amiga 2000
☐ 23. Amiga 2500 ☐ 25. Amiga 500

- G. Where do you use your Amiga(s), and about how many hours per week do you use an Amiga at each location?
☐ 26. at home _____ hours per week
☐ 27. home office _____ hours per week
 (type of business _____)
☐ 28. at work _____ hours per week
 (type of business _____)
☐ 29. at school _____ hours per week
 (applications _____)
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- H. How much money are you likely to spend on all Amiga product purchases this year?
☐ 30. \$0-\$250 ☐ 34. \$1501-\$2000
☐ 31. \$251-\$500 ☐ 35. \$2001-\$4000
☐ 32. \$501-\$1000 ☐ 36. over \$4000
☐ 33. \$1001-\$1500

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☐ 37. local Amiga dealer ☐ 39. manufacturer
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☐ 41. frequently ☐ 43. once
☐ 42. occasionally ☐ 44. never

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☐ 45. subscribe (how long? _____ years)
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☐ 48. other: _____

- L. How many others not including yourself usually see or read your issue of AC each month?
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☐ 56. education/early learning ☐ 59. programming
☐ 57. games ☐ 60. video

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☐ 7. 18-24 ☐ 10. 50-64
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 (type of business _____)
☐ 29. at school _____ hours per week
 (applications _____)
 TOTAL: _____ hours per week

- H. How much money are you likely to spend on all Amiga product purchases this year?
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☐ 33. \$1001-\$1500

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- J. How many times have you purchased an Amiga product after seeing it advertised in AC?
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☐ 50. yes—but only once ☐ 52. no—but soon.
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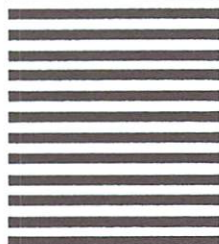
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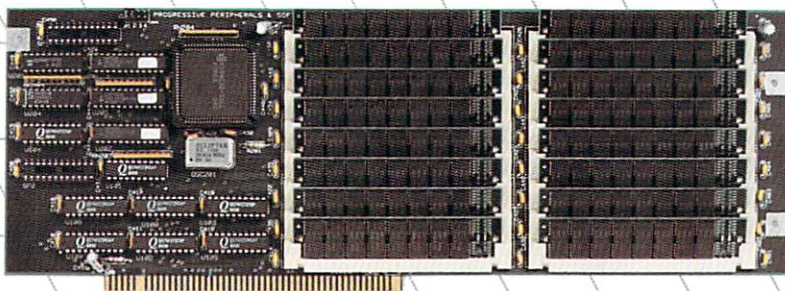
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- 24-bit Ray tracing in super high resolutions
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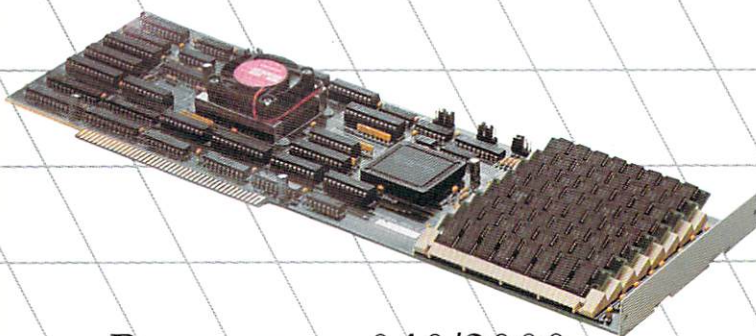
Fully compatible with 16MHz, 25MHz, "Tower" and 68040 A3000 systems

Easy to Install - Plugs into Amiga 3000 Expansion Slot

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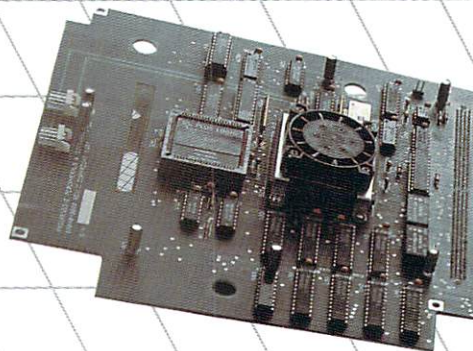
Meets all "Zorro III" specifications

68040 ACCELERATORS FOR THE AMIGA 2000 AND 3000!



PROGRESSIVE 040/2000

- 28MHz Asynchronous Operation
- Over 23 times the speed of a standard Amiga 2000
- AmigaDOS 1.3 and 2.0 Compatible - works with 1.3 or 2.0 ROM's
- Compatible with 3-D Professional, the Video Toaster®, Imagine®, and many other hardware peripherals and software
- Expandable to 4, 8, 16 or 32 megabytes of 32-bit RAM using standard, low cost 1 MBx8 or 4MBx8 page, static column or nibble mode 80ns SIMM modules.
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- Designed for Upgradability to 33 MHz 68040 version



PROGRESSIVE 040/3000

- 25MHz Synchronous Operation
- Full 25MHz performance on 16MHz A3000 systems!
- Directly accesses 32-bit memory on A3000 motherboard
- Over Four Times the Speed of a Standard 25MHz Amiga 3000
- Compatible with 16MHz, 25MHz, and "Tower" series computers
- Software switchable from 68040 to 68030 mode - no jumpers necessary
- Compatible with nearly all 2.0-compatible software and hardware
- Requires ROM-Resident AmigaDOS 2.0

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We can't show you the power and quality of the Video Toaster in this magazine ad, so we've decided to prove it with a free VHS tape about the Toaster *produced entirely with the Toaster*. This unique demo-within-a-demo starring NewTek's Kiki Stockhammer is aptly-titled **"REVOLUTION"**. It will show you why the Video Toaster is the most successful and important product ever created for the Amiga.

Every \$2495 Video Toaster comes complete with:

- Broadcast-Quality Four Input Switcher
- Real-Time Digital Video Effects
- 35 ns Character Generator
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- Interactive Color Processor
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Whether you're doing graphics, animation, video production, or multimedia, the Toaster delivers stunning quality at a breakthrough price. Find out why everyone from *Time* and *USA Today* to *Business Week* and *Rolling Stone* are raving about the Toaster. Witness the **"REVOLUTION"** in your own home or office for free. Featuring the Toaster's mind-blowing effects, titles, and graphics along with animation by Todd Rundgren and 3D artist/LightWave programmer Allen Hastings, like the Toaster itself, this videotape will knock your socks off.

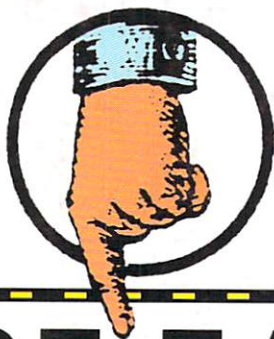
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